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Montana Outdoors

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NOVEMBER–DECEMBER 2016

FULL RECOVERY

The case for delisting Yellowstone region grizzly bears

IN THIS ISSUE:

MEN OF THE MOUNTAINS

A DIFFERENT TYPE OF PROPERTY RIGHT

SQUEEZING INTO THE NATION'S DEEPEST CAVE

SHOULD FWP MANAGE INDIVIDUAL ANIMALS OR POPULATIONS?

Montana Fish, Wildlife & Parks

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Montana Outdoors

NOVEMBER-DECEMBER 2016

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TIGHT FIT
A caver squeezes through a passage in Tears of the Turtle cave en route to a record-setting descent. See page 10 to find out where in Montana this remarkable expedition took place. Photo by Braden Gunem.

FRONT COVER
Grizzly populations are expanding rapidly beyond their core habitat. See page 16 to learn why states want to regain control. Photo by Kevin Dietrich.

Longtime observer

Ben Pierce's "The Price of Popularity" on the Madison River (July-August) seemed to gloss over what I believe is the biggest change in recent years altering the fly-fishing experience for many of us. During my 67 years living on the Madison, I've seen that the management of the river—including what retired FWP biologist Dick Vincent accomplished and the improved regulation of Hebgen Dam—has made a positive impact despite the huge growth in fishermen numbers.

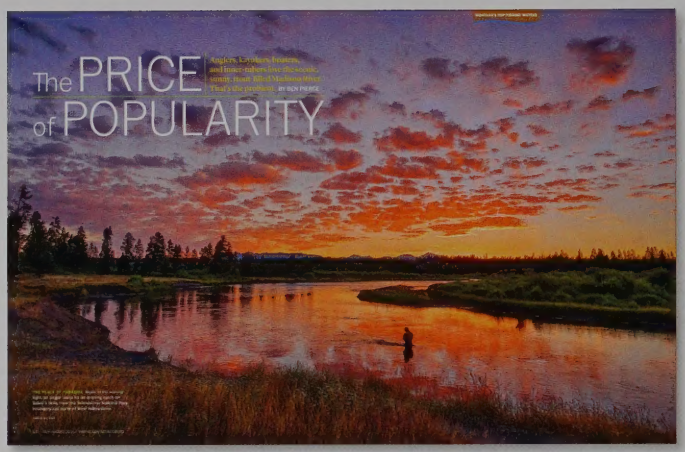
What was only briefly mentioned in the article was the drastic increase in the numbers of guides and outfitters. A moratorium was put on additional guides back in the 1980s, but for some reason it was dropped. Now you cannot escape the constant commercial deluge. The upper wade section needs to be just that, a wade section, without any use of boats. It's frustrating to walk some distance and then have guides in boats drop off clients right in front of you.

David Klatt
West Yellowstone

Priceless rivers

Many thanks for your excellent feature on the Madison River. Here in Montana, our priceless rivers are like family to us, and we will do anything to protect them. So hats off also to FWP for closing the Yellowstone River when it did. That valuable resource is just too important, long term, to take any chances. We need good people whose hearts are in the right place when hard decisions like that one need to be made.

Tony Etchison
Livingston



Out of the environment

The article "Deadly Decoration" (July-August) is another positive step in current efforts across Montana to educate people about the dangers to ospreys and other wildlife from carelessly handled twine. Unfortunately, the problem isn't new or local. One of my Montana State University graduate students and his co-authors were the first to publish a study on osprey entanglement from their research in the late 1990s. They found entangled nestlings in 5 percent of successful nests in the Flathead Lake Basin and along the upper Missouri River. A few years ago my colleagues and I reported that 3 to 4 percent of nestlings produced on the Yellowstone River from Gardiner to Miles City became entangled. These local studies provide estimates of entanglement rates that, fortunately, are lower than those in Saskatchewan. Research there showed a 12 percent osprey nestling entanglement rate.

The affinity some ospreys have for baling twine—and not just orange but any color—is remarkable. I have freed nestlings from twine during banding and cleaned the nest, only to return two weeks later to free the same nestlings after adults brought in more twine. Given the attraction of nest adornments to ospreys, cleaning nests is unlikely to have a major effect on reducing entanglements. We need to get the stuff out of the environment.

Marco Restani, PhD
Director of Conservation, Montana Audubon
Helena

> "That valuable resource is just too important, long term, to take any chances.

Benign imports?

Reading Bruce Auchly's essay on pheasants ("Prepare Again to be Humbled," September-October) makes me wonder why these birds, transplanted from Asia, aren't considered an invasive species. Are they over-occupying nesting and feeding grounds to the detriment of native Montana game birds?

J. Koski
Bozeman

Editor Tom Dickson replies: Pheasants are indeed non-natives, but they aren't considered invasive because they don't displace native sharp-tailed grouse and other native birds. They thrive in farmed areas—places where sharptails don't do well—and aren't as abundant in native prairie, where sharptails flourish. Like Canada geese, white-tailed deer, and fox squirrels, pheasants prosper where humans have altered the environment—but only to a point. The increased loss of CRP grasslands across northeastern Montana in recent years has caused pheasant population declines.

Homesick soldier

I recently received your July-August issue in a care package from my mom. I'm from Helena, and when I got the magazine it made me miss home that much more. I arrived at basic training in June and will likely miss this hunting season, which is depressing. But I knew there would be sacrifices when I joined the Army. Thank you for that Pan-Seared Venison recipe, showing me how my state is doing, and reminding me of its beauty.

Pvt. Dustin Bishop
Fort Leonard Wood, MO

Corrections

The map of the Madison River Valley on page 21 of the July-August issue shows O'Dell Creek coming into the Madison from the west. It actually comes in from the east. In the September-October issue's director's message on the shoulder seasons, we mistakenly wrote that Montana was home to 65,000 elk in the 1990s. In fact, that was in the 1960s. In the 1990s the population was roughly 115,000.

Speak your mind

We welcome all your comments, questions, and letters to the editor. We edit letters to meet our needs for accuracy, style, and length. Write to us at Montana Outdoors, *P.O. Box 200701, Helena, MT 59620-0701. Or e-mail us at: tdickson@mt.gov.* ■

Venison Carbonnade (Flemish Stew)

By Tom Dickson | Preparation time: 10 minutes | Cooking time: 3.5 hours | Serves 6

SHUTTERSTOCK

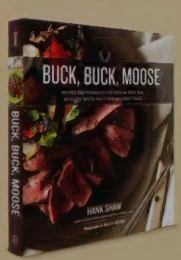
It's a classic conundrum for people who like to cook: Prepare a recipe you know will produce a fantastic dish, or take a chance with something new?

I face that every time I pull a package of duck, pheasant, or venison from the freezer. I've been cooking long enough to have discovered delicious recipes to last me and my wife a lifetime. With three pounds of lovely elk shoulder in front of me, why not make John Besh's Braised Venison, or Marcus Samuelsson's Perfect Venison Stew, or Hank Shaw's Venison Sauerbraten—all of them superb?

Yet what if there's an even better braised-venison recipe out there that I haven't yet discovered? On the other hand, what if the one I find is not as tasty as the surefire dishes?

I mulled over that choice last weekend and decided to take a chance on a new recipe that seemed foolproof: Elk Carbonnade, by Jonathan Miles, *Field & Stream*'s Wild Chef columnist and author of the indispensable *The Wild Chef* cookbook. Carbonnade is a Flemish, or Belgian, stew made with bacon, onions, brown sugar, and dark beer. You could toss a baseball mitt into those ingredients, simmer for two hours, and produce a dish to serve guests. Imagine how the recipe, which I altered only slightly from the original, tasted with a cut of prime elk shoulder.

—Tom Dickson is editor of Montana Outdoors.



ESSENTIAL VENISON COOKBOOK

Anyone who reads this column regularly knows I'm a huge fan of Hank Shaw and his award-winning game cooking blog *Hunter Angler Gardener Cook*. The San Francisco–based hunter, chef, and author has just written a new venison cookbook, *Buck, Buck, Moose*, that I found hard to put down. The 304-page cookbook includes chapters on field dressing, aging, and butchering as well as recipes for deer, elk, moose, and pronghorn. Dishes like Mexican Barbacoa, Icelandic Venison with Blueberry Sauce, and Kentucky Burgoo are beautifully rendered by master food photographer Holly A. Heyser.

INGREDIENTS

- 3 lbs. venison shoulder or neck meat, cut into 2-inch cubes
- 2 T. butter
- 4 slices bacon, chopped
- 3 yellow onions, chopped
- 1 T. dark brown sugar
- 4 cloves garlic, minced
- 16 oz. Belgian dark strong ale or other dark beer
- 1 c. chicken stock
- 1 bay leaf
- 1 t. dried thyme
- 3 T. flour
- 1 T. apple cider vinegar or lemon juice
- Salt and pepper, to taste
- ¼ c. chopped parsley, for garnish

DIRECTIONS

Heat a large pot or Dutch oven over medium-high heat. Add the butter and bacon, and cook until barely crispy. Remove the bacon with a slotted spoon, reserving for later. Dry the venison with paper towels, then salt and pepper generously. Add the meat to the pot, in batches to avoid overcrowding, and raise the heat to high. Brown the meat well on all sides, then remove to a plate.

Add the onions and brown sugar to the pot and reduce the heat to medium-low. Cook, stirring occasionally, for about 20 minutes, or until the onions turn a deep golden-brown color. Stir in the garlic and cook for two more minutes.

Raise the heat to medium-high. Pour in the beer and scrape the bottom of the pot with a wooden spoon to dislodge the tasty brown bits (known as fond). Bring to a boil, then add the reserved bacon and meat along with any accumulated juices. Add the bay leaf, thyme, and chicken stock plus extra water to cover the meat. Reduce heat, cover, and simmer for two hours.

Before serving, uncover and raise heat to medium. Sprinkle in the flour, and stir to thicken. Stir in the vinegar or lemon juice. Add salt and pepper as needed. Serve with mashed potatoes, topping with a sprinkling of parsley.

Wake-up call

This past August FWP took the unprecedented step of closing a 183-mile stretch of the Yellowstone River to all recreational activity. We made the decision after learning that a parasite had killed tens of thousands of mountain whitefish. Tissue samples showed that the deaths were caused by an infestation of parasites that overwhelmed the gills of the fish. Because we didn't know the extent of the infestation and what other factors were at play, we closed the Yellowstone until we could learn more about what was happening to the river and its fish populations.

We recognized at the outset that our decision would cause economic hardship to motels, restaurants, guides, outfitters, and rafting companies in Livingston and Gardiner. But our job at FWP is to protect the Yellowstone and Montana's other treasured trout rivers. We had no other responsible option.

We have to do what we can to help fish and wildlife be as resilient as they can be.

Most people agreed with our decision. A survey by the *Livingston Enterprise* found that 93 percent of respondents supported the closure.

Parasitic infestations rarely occur in wild, healthy fish. But it appears that the combination of low flows, which crowd fish into pools, and warm water on the Yellowstone this summer increased stress on the fish and created environmental conditions that allowed the parasite to thrive. That created what Eileen Ryce, the head of FWP's Fisheries Division, calls a "perfect storm" for the parasite to thrive. She notes that in addition to killing fish outright, the parasite can also cause proliferative kidney disease in trout and salmon.

Fortunately, as water temperature cooled in September and sightings of dead whitefish declined, we were able to reopen the river.

The Yellowstone closure is a wake-up call to Montana that diseases, invasive species, and environmental changes like warming water threaten the state's fish and wildlife. Fish populations are under siege by zebra and quagga mussels, didymo, New Zealand mud snails, and whirling disease. Wildlife face chronic wasting disease, West Nile virus, epizootic hemorrhagic disease, and brucellosis.

FWP, other agencies, and conservation nonprofits monitor these diseases and invasives and work both to curb their spread within the state and prevent them from crossing state borders. But people are so mobile nowadays that it's only a matter of time before, for instance, chronic wasting disease begins to show up in Montana deer and elk. The disease is now in Wyoming, South Dakota, North Dakota, Saskatchewan, and Alberta. We're almost surrounded.

Montana will also likely face more river closures in the future. Low flows and warmer water weaken coldwater fish, making them susceptible to disease. Climatologists predict lower snowpack and less rain in the decades to come. Closures like we saw this summer could become the new normal.

It pains me to make these dire predictions. But it's part of FWP's responsibility to warn the public and prepare them for possible changes in fish and wildlife populations and related recreation.

Fortunately, we have seen some hopeful signs. Whirling disease, for instance, while still a problem, has not been as deadly to trout as many scientists and anglers feared. In fact, it appears that Madison River rainbows that survived the die-offs in the late 1990s were able to pass their resilient genes on to ensuing generations. Today the rainbow population on the Madison is back to pre-whirling disease levels.

But we can't rely solely on the natural resiliency of fish and wildlife. We must do what we can to help them be as resilient as they can be. That's why FWP monitors fish and wildlife populations and inspects dead birds, mammals, and fish—to get out ahead of problems before they become severe. It's why we impose summer hoot owl restrictions and fight to maintain adequate river flows to prevent fish from getting stressed. Why we inspect watercraft and promote "Clean, Drain, Dry."

And why, when conditions require, we have to temporarily close a river.

—**M. Jeff Hagener**, Montana Fish, Wildlife & Parks Director

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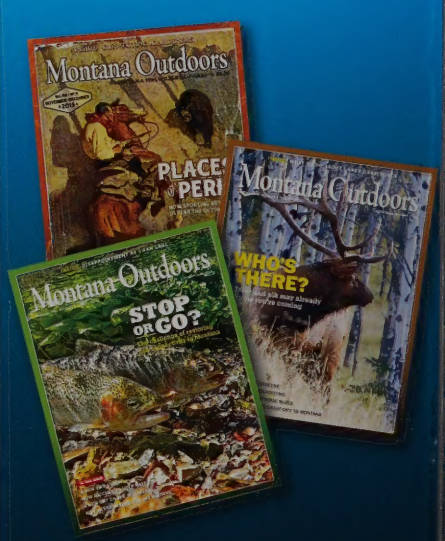

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JOHN WARNER

PEP TALKER

ASHLEY TAYLOR
Wildlife Biologist, Harlowton

One of my favorite parts of this job is working the mandatory hunter check station here in Lavina. When I was a kid hunting elk around Dillon with my dad, I loved stopping at FWP check stations. That's one reason I became a wildlife biologist. I'm kind of an introvert with extrovert moments. Being a wildlife biologist can get pretty lonely, so it's fun to have the chance to talk with people at the station and renew these loose friendships I've developed over the years with hunters.

I run a check station in Broadview the opening weekend of antelope season and then move it to Lavina for each Sunday of the big game season. The information I get at the station is essential. It helps us understand population changes and hunter success from year to year. It also lets us track poor year classes, like the 2010 year class of mule deer and antelope that were hammered by the severe winter of 2010–11. We continue to see fewer of that year class in the back of pickups than those of earlier or later year classes.

Many hunters don't understand why they have to stop at check stations no matter what, even if they weren't successful that day and don't have any game. I understand why someone who hunted five days and didn't get a deer wouldn't want to stop and tell someone about that, so I try to make the check-in process as quick and painless as possible for those hunters. But that information—that they didn't succeed—is just as important as the information we get from hunters who were successful.

Hunters should know that when they stop at a check station, they're helping manage their wildlife.

Photographer **JASON SAVAGE** of Hamilton says it took weeks of shooting thousands of photographs of great blue herons at Lee Metcalf National Wildlife Refuge last winter to capture this one remarkable image. "I'd found a spot along a road close to some ponds where they were feeding and I could set up my tripod," Savage says. "It was one of those overcast winter days where the water and sky are uniformly white, making the shape and colors of the birds stand out even more." Savage says he photographed this heron from about 20 feet away with a 500 mm telephoto lens. "I took the shot right as it was going in for a fish, and a fast shutter speed made the water splash look like it's frozen. With the head underwater, it's not your standard shot of a great blue heron, but that's what I like about it." ■

OUTDOORS REPORT

2030 The year scientists now predict that all the glaciers in Glacier National Park will have disappeared.

SOURCE: U.S.G.S.

Montana Outdoors takes silver at conservation magazine "Olympics"

Montana Outdoors continues to rank among the nation's top state conservation agency magazines. At the 2016 Association for Conservation Information awards competition, the FWP publication won second place in the magazine category, beating third place *Texas Parks & Wildlife* but losing to winner *Xplor*, published by the Missouri Department of Conservation.

Over the past 11 years, *Montana Outdoors* has won four first-place, five second-place, and two third-place awards in the magazine category.

Montana Outdoors also won second place in the wildlife article category for "Gardening with a Gun" (November-December 2015), and third place in the general interest category for "Secrets of a Morelling Master," (March-April 2015).

FWP won first place in the news release category with "A Little Bit of Courtesy Goes a Long Way," about the need for hunters to respect landowners, written by Andrea Jones, the department's regional Information and Education Program manager in Bozeman. ■

RAPTOR ID

Probably a roughleg

Hunters and others driving past grasslands and open farmlands from now until late winter will no doubt see mid-sized hawks with pale underwings and dark wrist patches soaring overhead or perched on utility poles and fence posts.

Those are probably rough-legged hawks.

Roughlegs breed in the Arctic and winter in

VISION

FWP's way forward

In these uncertain times right before state and national elections, one thing Montanans can count on is that FWP will continue to lead in the stewardship of the state's fish, wildlife, parks, and recreational resources. Recently the department outlined its plan to maintain and improve upon that conservation tradition over the next decade in its new *FWP Vision and Guide 2016-2026*.

Created using public and employee input, the document identifies the department's core values, such as serving the public, embracing the public trust, and respecting private property rights. It highlights challenges facing the department, like habitat loss, the need for more public access, pressure to privatize fish and wildlife, and an increasingly diverse public interested in new ways of engaging with nature. And it makes clear the actions FWP will take to respond to those challenges, such as restoring and protecting habitat and providing a wide range of opportunities for people to connect with Montana's outdoors.

To view the *FWP Vision and Guide 2016-2026*, visit fwp.mt.gov/doingBusiness/insideFwp/visionAndGuide. ■

CLOCKWISE FROM TOP LEFT: CARTOON ILLUSTRATION BY MIKE MORAN; DAVID R. ARMER; THOM BRIDGE; THOM BRIDGE; LUKE DURAN/*MONTANA OUTDOORS*; LUKE DURAN/*MONTANA OUTDOORS*

Montana and elsewhere in the lower 48 states. Most other hawks that spend their summers in Montana—like the ferruginous and Swainson's—head south for the winter.

So even if the sun is in your eyes or the hawk is completely shadowed, go ahead and call it a roughleg. There's a good chance you'll be correct—at least until early spring, when those hawks head north and summer raptors begin arriving back here from southern climes. ■

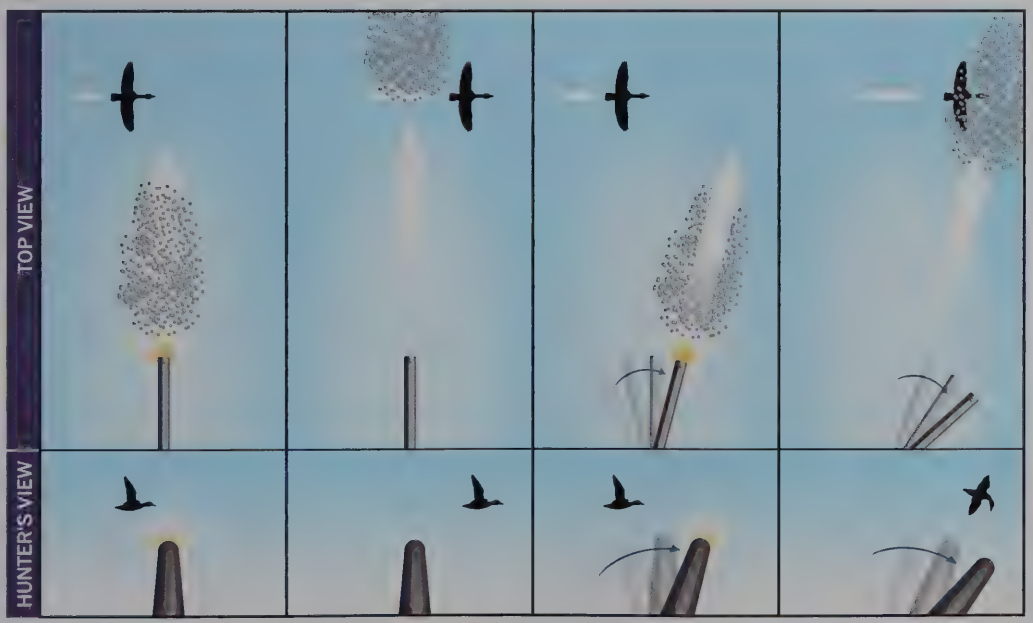
HUNTING

Drop ducks with a sofa

Late-season ducks are notoriously hard to hit. The speedy waterfowl appear from nowhere, race across the sky, then disappear before you know it. The key to dropping ducks, says shotgun ballistics expert Tom Roster, is to envision the shot string and then get those pellets far out in front of the bird.

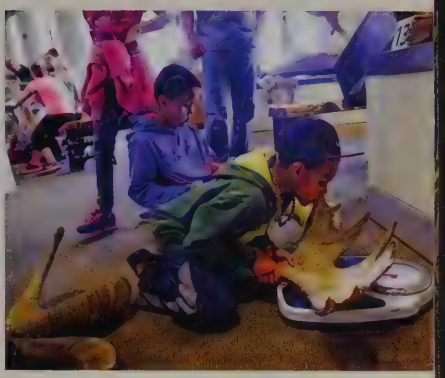
Hunters often picture pellets flying from their shotgun barrel at the same speed, arriving at the target all at once, like a flyswatter hitting a wall. But pellets move in a long, cylindrical string, with rounder ones out front and deformed ones lagging behind. When it reaches a duck, the string is about seven feet long and four feet in diameter—about the size of a sofa.

The trick is to make sure that most of that "sofa" is in front of the duck, not behind. "The worst thing you can do is shoot behind the target, because you aren't making use of all those pellets in the shot string," says Roster. He advises duck hunters to shoot *way* ahead of the duck's bill. "You have a lot more margin of error if you shoot too far ahead, but no margin if you shoot behind," he says. ■



Shooters who fire directly at a duck or only slightly ahead end up missing or wounding it because most of the shot string ends up behind the bird.

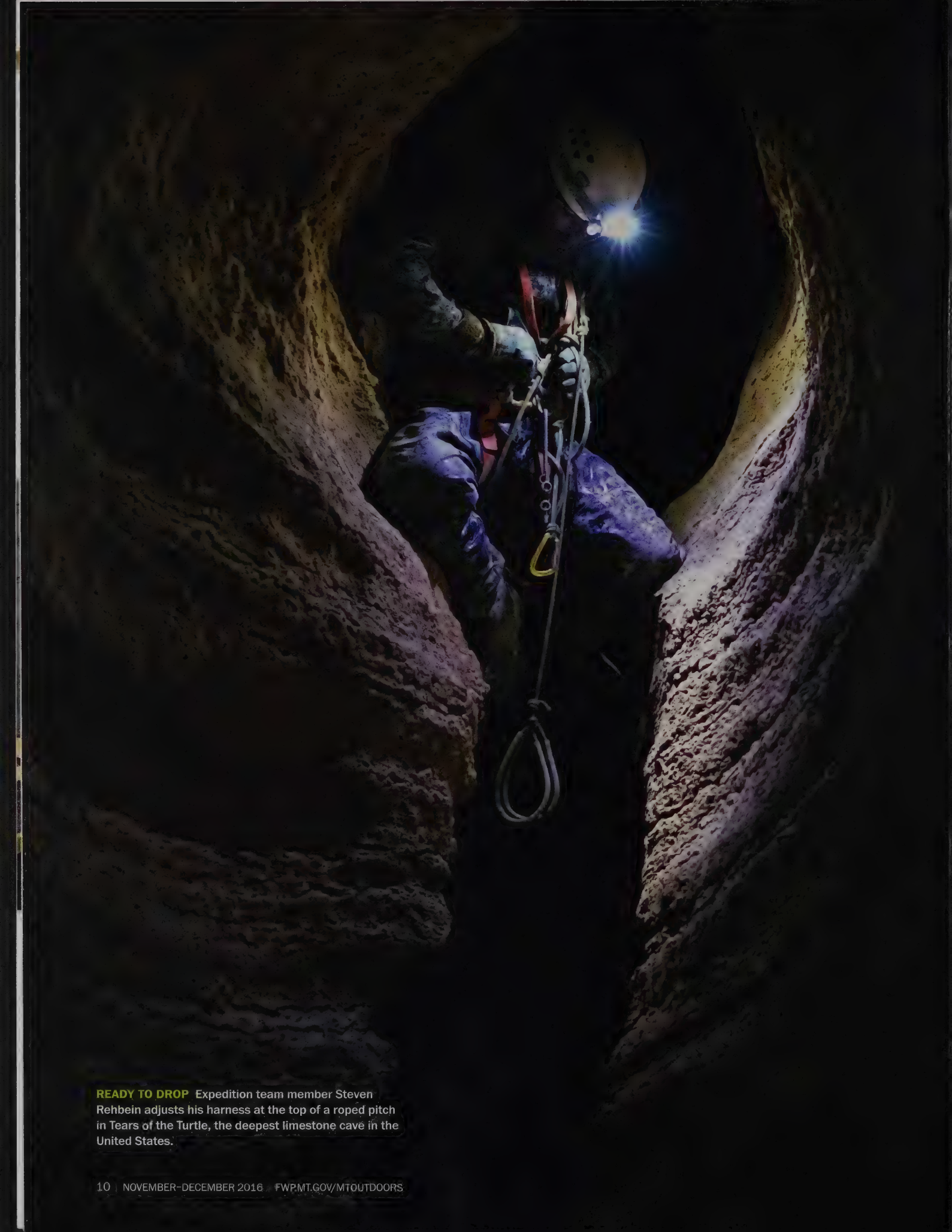
But when shooters swing through and fire farther ahead of the duck, the full sofa-sized shot string can do its work.



A wild place to visit

Heading to Helena this winter on a weekday? Stop by Montana WILD and check out the FWP facility's fish and wildlife exhibits and interpretive displays. Visitors can learn about Montana's conservation heroes, find out how FWP manages wildlife and fish, identify wildlife species, and touch antlers, horns, and pelts. The education center, just off U.S. Highway 12 on Helena's west end, includes a "living stream" holding trout, channel catfish, freshwater drum, bigmouth buffalo, and Montana's rarest fish—pallid sturgeon. "If you come between 8 and 10 a.m., you might have a chance to see one of the live 'ambassador' birds of prey that we bring out from the Wildlife Center next door," says Laurie Wolf, Montana WILD Education Program manager.

Montana WILD is open Monday through Friday from 8 a.m. to 5 p.m. Groups of ten or more must schedule their visit ahead of time. For more information call (406) 444-9944 or visit fwp.mt.gov/education/montanaWild. ■

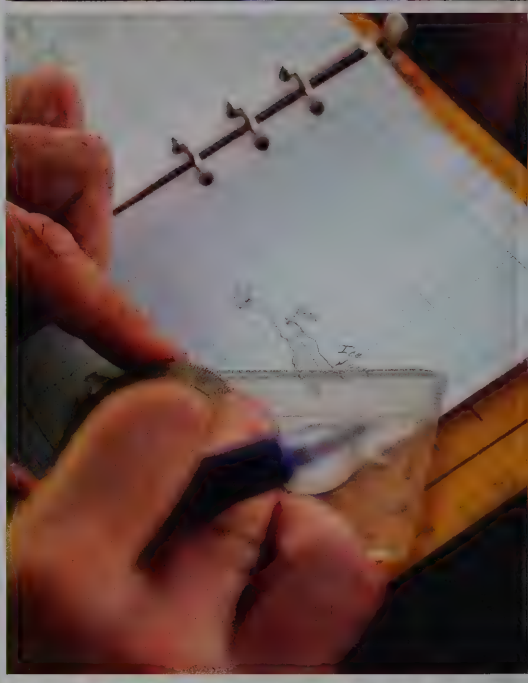


READY TO DROP Expedition team member Steven Rehbein adjusts his harness at the top of a roped pitch in Tears of the Turtle, the deepest limestone cave in the United States.

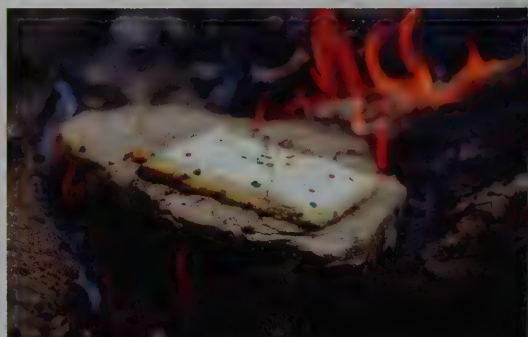
HOW LOW CAN THEY GO?

A team of cavers descends into the nation's deepest limestone cave, in Montana's Bob Marshall Wilderness, farther down than anyone has ever been.

Story and photos by Braden Gunem



TRUDGE UP, THEN DOWN Clockwise from left: Approaching the entrance of Virgil, a cave near Tears of the Turtle, in the Bob Marshall Wilderness; packing for the descent into Tears; Brian Gindling works his way past ice formations in Tears; warming a snack; sketching the map of a new passage in Tears.



This past July, a team of 12 expert cavers from across the United States spent ten days exploring and mapping three remote alpine caves in the Bob Marshall Wilderness of Montana. I was invited to accompany the team and photograph their descents.

One goal of the expedition was to set a new record by venturing farther down one of the caves, the deepest limestone cave in the United States. Jason Ballensky, expedition leader, says he and a partner first discovered that cave in 2005. "Cavers have known for decades that the Bob has deep caves," says Ballensky, who grew up in Miles City and now works in California as a telecommunications engineer. The cave enters Turtlehead Mountain in the center of the wilderness area several miles west of the Chinese Wall. Ballensky and his partner named it Tears of the Turtle. "We knew it would be a brutal descent, so we'd cry if we couldn't make it but would also cry if we did," explains Ballensky. He returned in 2014 and led a team that reached a depth of 1,659 feet, laboriously recorded with various devices that measure distance and slope, making it the deepest limestone cave in the country.

Tears of the Turtle isn't the kind of cave most people imagine, with giant chambers filled with beautiful formations. It's a long, narrow crack descending into a dark abyss. Parts of many passages are so tight the cavers must move sideways with their back and chest rubbing rock. Sometimes they have to crawl or scooch along on their side. Many passages have no floor and require what's known as stemming—bracing feet, knees, and hands against the walls to keep from dropping. This is no place for novices.

Tears is located in one of the most inaccessible places in the Lower 48, requiring team members to make a 22-mile approach from the base of the Swan Range carrying heavy packs of food and gear. Once inside, they used a total of 49 climbing ropes to pass through tight passages coated in icy sludge, slowly descending for hours at a time, before bringing their weary, mud-covered selves back up to an underground resting area. A rescue from the bottom would have taken days, and a broken leg or torn knee cartilage likely would have

Braden Gunem is a photographer in Crested Butte, Colorado.

meant death from hypothermia in the constant 37 degree temperature.

During the 2014 expedition, the team was unable to get past a 100-foot-long passage of deep mud they named the Slough of Despond. "It's the kind of cold, sloppy mud you worry about getting stuck in and never getting out of," says Ballensky. On this most recent trip, crew members knew they had to bypass the mud pit to reach deeper depths.

The team set up an advance camp in a large room 40 feet by 200 feet, deep in a passage above the previously impassable mud pit. The camp provided a place where the explorers could sleep and eat before continuing deeper. Two teams of three cavers each spent three days underground, using the middle day to explore deeper and the other two to get in and out. Other members of the team hauled gear to and from the advance camp.

To get through the Slough of Despond, the cavers brought mud shoes, a type of snowshoe made for glacial mudflats. The footwear didn't work, so the first descending team spent an entire day climbing along a wall over the mud. Once past that hazard, team members found more tight passages that continued mostly horizontally and not in the downward direction as they had hoped. Altogether, the two teams surveyed 600 feet of new passage beyond the mud pit, while descending a total of only 30 additional feet. "We would have tried to go farther, but we'd reached the limits of our endurance," Ballensky says.

Still, the expedition surpassed the old depth and achieved a new record.

What is the appeal of squeezing through tight rock passageways in the dark, enduring days of cold and fatigue, and risking life and limb? "Seriously, we often ask that ourselves," says Ballensky. "I guess we do it because we go into places where no one has ever been before." Expedition caving is a lot like mountaineering, only in the opposite direction.

The cavers are going back. "I could tell by the air movement that the cave is a lot deeper than we reached this summer," says Ballensky. "But we won't return until at least 2018. We need time to figure out how we can spend more time down there to go even deeper."

NOT FOR BEGINNERS
Above: Jason Ballensky rappels down the Death is All Around You Drop in Virgil cave. Above right: Covered in icy mud, exhausted team members take a break in Tears of the Turtle.

Cavers work with FWP on bat conservation

Since 2006, when white-nose syndrome (WNS) was first discovered in bats in a New York cave, wildlife conservation agencies have been taking steps to prevent the fatal disease from spreading. White-nose syndrome or the pathogen that causes it, *Pseudogymnoascus destructans*, has since been found in 28 states and three Canadian provinces. In some caves where WNS is prevalent, bat numbers have declined by 90 percent.

Though neither the disease nor the pathogen has appeared in Montana, wildlife officials are taking steps to reduce the chances that bats become infected. To keep watch on the state's caves and bat populations, FWP has worked closely with members of Northern Rocky Mountain Grotto (NRMG). "Cavers are out exploring caves all the time, so they're a huge help in monitoring remote sites and gathering information on bat habitat and bats in general," says Lauri Hanauska-Brown, chief of the FWP Nongame Wildlife Management Bureau.

HEALTHY FOR NOW A Townsend's big-eared bat clings to the wall of a Montana cave. So far, bats here have remained free of a fatal disease infecting those in many other states.

JESSE LEE VARNA

As part of the partnership, cavers follow decontamination protocols and report on the group's website whether caves do or don't have bats. The information is then automatically forwarded to the Montana Natural Heritage Program to add to a central database, says Bryce Maxell, the heritage program's director. Cavers have provided technical expertise to help biologists enter narrow caves to capture and test bats for WNS. They have also installed temperature and humidity data loggers, cave use registers, bat roost loggers, and signs warning people about the bat disease and the need to decontaminate clothing before moving from one cave to another.

Ian Chechet, chairman of the NRMG and a member of the Tears of the Turtle expedition, says that cavers and conservation agencies in Montana have established working relationships not found in other states. "For various reasons, cavers and public agencies are at odds in some parts of the country," he says. "But here in Montana we're working together, and that's been good for us in the caving community, and the agencies tell us it's helped them too."

—*Tom Dickson*

Overdue

State and federal agencies say it's time to take Yellowstone region grizzly bears off the threatened species list.

By Tom Dickson

IN GOOD ENOUGH SHAPE? Delisting opponents say the Greater Yellowstone Ecosystem grizzly population is still at risk. State and federal biologists maintain that the population is healthy and will continue to thrive after delisting.

JAIME & LISA JOHNSON

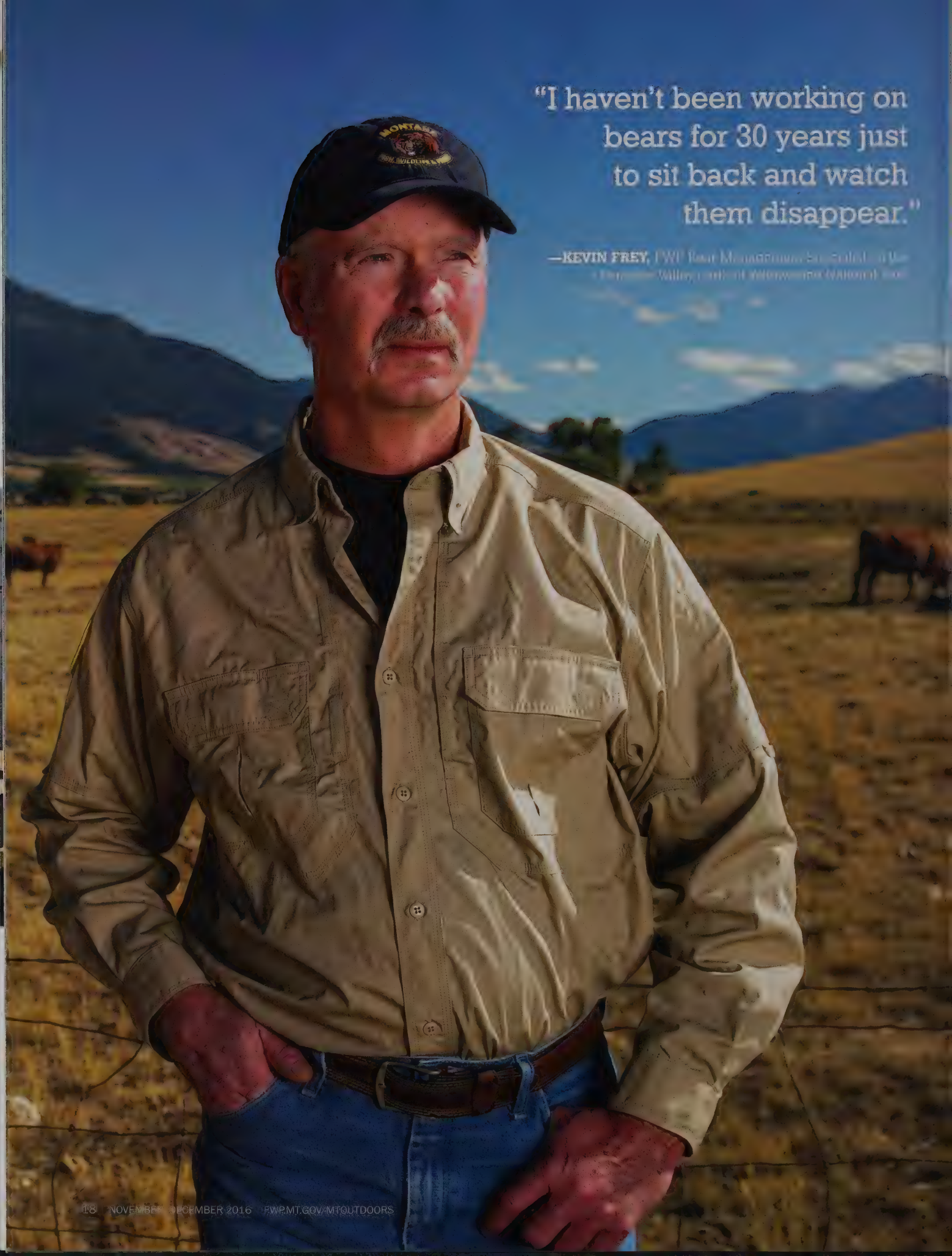
During a recent late August morning, Kevin Frey drives up Paradise Valley on U.S. Highway 89 toward Yellowstone National Park. Pointing toward mountains surrounding the valley's fields of grazing cattle, irrigated alfalfa, and newly constructed ranchettes, the Montana Fish, Wildlife & Parks bear management specialist says grizzlies in that high country have begun beefing up to build their fat reserves for hibernation, less than three months away. The bears consume grass, forbs, berries, roots, ants, moths, small mammals, elk carcasses—you name it. Some follow the natural foods down to the foothills and valley floor, where they encounter apple trees, garbage cans, dog food, and livestock. Most ignore the human-produced temptations, but a few give in. That's when the problems start.

Many people hold strong opinions about grizzlies, from reverence to hostility. But very few, like Frey, actually work with the bears: collaring, tranquilizing, trapping, relocating, and sometimes even having to make the hard decision to euthanize those that pose a severe threat. Frey takes calls from the rancher who lost a calf, or the parents who spotted a grizzly the night before out by the garage. He works in Montana's portion of the Greater Yellowstone Ecosystem (GYE) where grizzlies and people live together, mostly in harmony but sometimes not. His job: Help resolve conflicts and prevent new ones from flaring up.

Tall and soft-spoken, with a mustache grayed in part by job stress, Frey is on the front lines of the current controversy over removing ("delisting") the GYE grizzly bear population from the federal list of threatened species. Environmental groups, Indian tribes, and many scientists, including luminaries E. O. Wilson and Jane Goodall, say it's too soon to end federal protection and give management authority back to Montana, Wyoming, and Idaho. On the other side are federal and state wildlife agencies, with their own highly credentialed scientists, who point out that the current population of at least 717 bears far exceeds the recovery goal of 500, and conservation guarantees for sustained recovery are in place. Delisting, they say, is long overdue.

U.S. Fish & Wildlife Service (USFWS) director Dan Ashe has hailed the Yellowstone grizzly recovery as a "historic success" for wildlife conservation. The population is so healthy, in fact, that bears are now spilling out of the recovery area. As a result, surrounding states say they need more flexibility to respond to new and growing conflicts so that bears and humans can coexist.

Based on studies by state and federal scientists on the Interagency Grizzly Bear Study Team, the USFWS in March 2016 proposed removing the GYE grizzly population from the list of federally protected species. The federal agency, now reviewing public comments on the proposal, has said


"I haven't been working on bears for 30 years just to sit back and watch them disappear."
—KEVIN FREY,

it will make its decision soon.

As we drive south toward Gardiner, Frey points to places where he has seen and trapped grizzlies. One bear tore up the upholstery of an SUV parked in a driveway. Another broke into a cabin. Along the Yellowstone River a bold bear pulled a mini-fridge from a building next to a bed-and-breakfast. "Human safety is always on our mind when we deal with bear conflicts," Frey says. Last June a grizzly broke into a house at night while a couple in their 80s was sleeping upstairs. They were scared but unharmed by the ursine intruder. "We put up electric fence around the house and set traps," Frey says. "The bear never returned, but I didn't sleep well for weeks."

DOWN THEN UP

Grizzlies once roamed across the western half of North America from the Yukon to Mexico. Because the large carnivores threatened the tide of livestock and people flowing west, they were shot, trapped, poisoned, and driven into the most remote areas of the United States. By the 1920s, grizzlies were reduced to just 5 percent of their historic range in the Lower 48.

In 1975 those populations were designated as threatened under the new Endangered Species Act (ESA). Then and today, the bears are concentrated in two major populations. The Northern Continental Divide Ecosystem (NCDE) population is centered in and around Glacier National Park. The GYE population is in and around Yellowstone. At the time of listing, possibly as few as 200 grizzlies remained in the GYE, which comprises 22.6 million acres across Wyoming, Montana, and Idaho.

Before federal listing, most grizzly deaths in the Yellowstone region occurred when park rangers were forced to trap and euthanize bold bears threatening people in campgrounds and picnic areas. After listing, the park eventually reduced mortality by closing garbage dumps and, using the mantra "A fed bear is a dead bear," teaching campers to keep food locked up. Meanwhile, state biologists worked with ranchers and farmers to bury dead livestock and install electric fencing around calving areas and beehives. They also killed repeat offenders when necessary. "A lot of what we've done is help build tolerance among the people who live with bears by responding when they need help," says Frey. To help reduce bear conflicts with people and livestock, the federal government closed backcountry logging roads and ended sheep grazing allotments in national forests near the park.

Recovery efforts worked beyond anyone's expectations. Though some grizzly bears that repeatedly attack livestock or pose a threat to humans are still trapped and either relocated or put down, the GYE population has steadily grown. By the early 2000s, the federal government announced that numbers had reached the recovery goal of 500. In 2007 the USFWS delisted the population. Environmental groups immediately sued the agency. They argued that the bears were at greater risk because increasingly warmer winters had exacerbated an infestation of mountain pine beetles, killing millions of whitebark pines, whose seeds are an important grizzly food. The 9th Circuit Court agreed. It ordered the population put back on the list of threatened species and directed the USFWS to study the effects of climate change and whitebark pine on the population.

While many grizzly advocates cheered the decision, communities and ranchers in the Yellowstone region braced themselves for more bear problems.

The Greater Yellowstone Ecosystem

Yellowstone and Grand Teton National Parks

The Greater Yellowstone Ecosystem (GYE) is one of world's largest remaining intact temperate zone ecosystems. The grizzly population there is the southernmost in North America.

MAP BY LUKE DURAN/*MONTANA OUTDOORS*. SOURCE: GREATER YELLOWSTONE COALITION

LEFT TO RIGHT: ERIK PETERSEN, INTERAGENCY GRIZZLY BEAR STUDY TEAM

FOLLOW THAT BEAR Biologists with the Interagency Grizzly Bear Study Team and the National Park Service fit a sedated grizzly bear with a radio collar so they can track its movements with telemetry.

LIVESTOCK LOSSES

On the Beartooth Plateau in south-central Montana near the Wyoming border, Justin Hossfeld stops his pickup just off the Beartooth Highway, one of the nation's most scenic routes. During two months in 2015, a female grizzly bear killed at least 11 cows in this one-square-mile area of Scotch Coulee, he says. The bear was eventually trapped and relocated 100 miles away, but recently

another grizzly moved in from nearby Custer National Forest. "It killed a yearling heifer over there last week, and we'll probably lose one head per week until hibernation," says Hossfeld, general manager for Sunlight Ranch Company, which operates ten ranches in Montana and Wyoming.

Nearby stands a small house where two bicycles lie beneath a swing set. Hossfeld points toward a brushy ravine 200 yards from the yard. "We're pretty sure the bear is down there somewhere, sleeping," he says.

This ranch is one of dozens in the GYE experiencing ever-greater livestock losses from grizzlies spreading out from their core habitat. Wyoming ranchers reported a 68 percent increase in livestock incidents from 2011 to 2014, from 77 to 130, despite measures taken to reduce conflicts. For his part, Hossfeld says he conducts calving earlier in spring before most bears emerge from hibernation, moves calving from pastures to feedlots with more human presence, and has replaced Angus cattle with a wilder breed better able to fend off predators. Though the preventive measures have helped, bear attacks continue, he says.

Over the past three years, the Montana Livestock Loss Board has paid state ranchers roughly market value for each confirmed cattle loss to a grizzly bear. But that doesn't cover decreased cow conception rates and weight loss from stress or his increased labor costs, Hossfeld says. "We've now got cowboys out riding all night with cattle." Unlike smaller ranches that lose livestock to bears, Sunlight can absorb the losses. "But at some point, if the cattle operation isn't profitable, the land will be sold off for other uses," Hossfeld says. Red Lodge, a popular gateway town to the Beartooth Range, is just ten minutes away. Conversion of this rangeland to new roads and subdivisions would further fragment habitat used by grizzlies and other wildlife.

Tom Dickson is editor of Montana Outdoors.

"We've now got cowboys out riding all night with cattle."
—JUSTIN HOSSFELD, General Manager, Sunlight Ranch Company in an area near Red Lodge where one grizzly bear killed at least 11 cattle in 2015

CRITICS' CONCERNS

U.S. Geological Survey senior research biologist Frank van Manen has led the Interagency Grizzly Bear Study Team (IGBST) since 2012. At his office just off the Montana State University campus in Bozeman, he pulls out a file of reports he and other team members have written on Yellowstone region grizzlies in recent years. A past president of the International Association for Bear Research and Management with a PhD in ecology and statistics, van Manen is considered one of the world's foremost experts on bear population dynamics. He has answers to delisting critics' three main concerns.

One concern is the decline of two important grizzly bear nutrient sources. "In the last decade, climate change has decimated the Yellowstone grizzly's most important food, the whitebark pine nut," wrote Doug Peacock, noted grizzly bear book author, in a widely publicized letter to President Barack Obama this past June denouncing the delisting proposal. Indeed, 40 to 75 percent of cone-producing whitebark pines in the GYE have died since the early 2000s. Another increasingly rare grizzly food is the Yellowstone cutthroat. The trout live in Yellowstone Lake and spawn in tributaries, where they provide a protein boost each spring to local eagles and bears. Cutthroat numbers have

ERIK PETERSEN

TIMELINE: Grizzly Bears in Montana

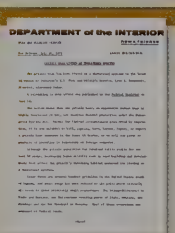
Pre-European settlement: The grizzly bear ranges from the Yukon to Mexico and from the Pacific Coast to the Mississippi River.

Historically, the large carnivore is viewed by many Indian tribes as a symbol of strength and good luck.

Late 1800s: Grizzlies are widely persecuted as pioneers and livestock spread west.

1920s: Grizzlies in the lower 48 states are reduced to 5% of their historic range. Healthy populations remain in western Montana and northern Wyoming.

1942: The Montana Fish and Game Department adopts the grizzly as its agency logo.



1975: The grizzly bear is listed as a federally threatened species, which requires recovering the species to self-sustaining populations.

declined by 95 percent following the illegal introduction of predatory non-native lake trout into the lake in the mid-1980s.

Loss of these foods, delisting opponents maintain, makes the GYE grizzly population more vulnerable and thus in need of continued federal protection. They point out that the population has not been increasing as quickly as it was two decades ago. The growth rate between 1983 and the late 1990s ranged from 4 to 7 percent per year, but has since slowed to 0 to 2 percent annually. Critics claim the lack of high-protein food is slowing population growth and accounts for grizzlies spreading farther from their core habitat.

Yet the IGBST discovered that grizzlies have found plenty of alternative foods to eat without having to leave their normal home range, van Manen says. Highly adaptable, grizzly bears consume more than 260 different food sources and historically thrived in arid environments as far south as Mexico. Whitebark pine nuts and cutthroat trout can be important foods, but when supplies dwindle grizzlies easily switch to other protein sources.

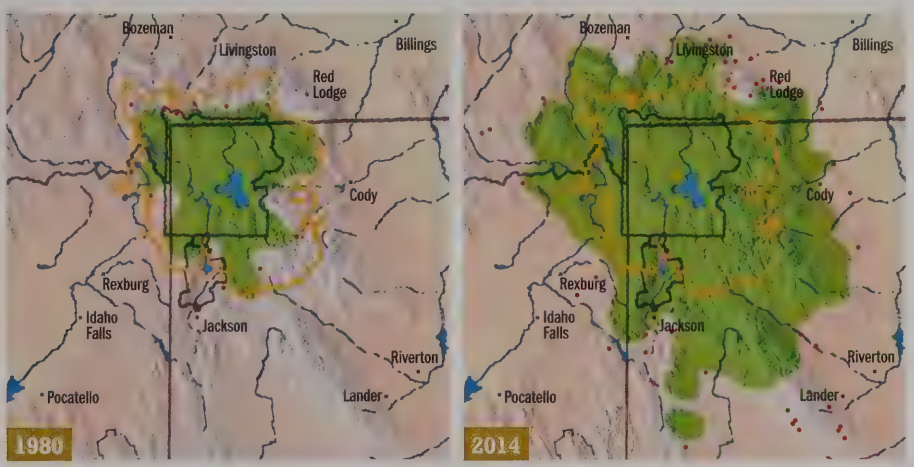
So what accounts for the population growth slowdown? Increased cub and yearling mortality, says van Manen. IGBST scientists found lower cub survival in areas of highest bear densities, indicating the population has become so dense that some adult males may be killing cubs. As for the continued spread of grizzlies, it appears the prime habitat is at capacity, forcing males to seek out new territory.

GENETICALLY HEALTHY

Delisting critics also worry about the GYE population's genetic isolation, which leads to inbreeding and the need for new blood. The concerns are not warranted, says van Manen. His study team recently documented only a 0.2 percent decline in genetic diversity over the past 25 years, indicating no evidence of inbreeding. "Sure, it would be desirable if the GYE grizzlies and, say, the NCDE grizzlies were connected genetically, but it's not essential," he says. According to van Manen, the Yellowstone population's genetic health will likely be fine for several hundred years if population levels remain steady. "And we can always introduce bears from other populations to enhance genetic diversity if need be," he says. The research biologist adds that grizzlies are now showing up between the GYE and NCDE populations, like in the upper Big Hole and the Elkhorn Mountains this year, indicating that genetic mixing may soon occur naturally.

The third concern is hunting. Under the delisting proposal, all three states—Montana, Wyoming, and Idaho—would allow some sport hunting of grizzly bears (see sidebar, page 22). Opponents fear that hunters would shoot bears near Yellowstone and Grand Teton National Parks. That would deprive visitors of seeing the popular attractions and in turn reduce tourism revenue in local communities. "Grizzlies' rarity has made them valuable assets, economically worth far more alive than as a

Grizzly bear distribution within the GYE 1980-2014



- The Grizzly Bear Recovery Zone, established by the U.S. Fish & Wildlife Service as part of the first grizzly bear recovery plan in 1982
- Grizzly bear distribution (occupied range)
- Confirmed sightings of grizzly bears outside their occupied range

Numbering as few as 200 in 1975, the GYE population grew under federal protection. By the early 2000s, the population had reached the recovery goal of 500. Today it's estimated at between 700 and 1,000 bears. As the occupied range expands, grizzlies are now seen near towns and ranches far outside the original recovery zone.

MAP BY LUKE DURAN/*MONTANA OUTDOORS*. SOURCES: NATIONAL PARK SERVICE; YELLOWSTONE ASSOCIATION; U.S. FISH & WILDLIFE SERVICE; INTERAGENCY GRIZZLY BEAR STUDY TEAM

1982: In a statewide vote, Montana schoolchildren choose the grizzly bear as the state's official state mammal. In 1983, Governor Ted Schwinden signs the Montana grizzly designation bill into law.

1993: The federal government issues a revised grizzly bear recovery plan with three specific recovery goals that have to be met for six consecutive years.

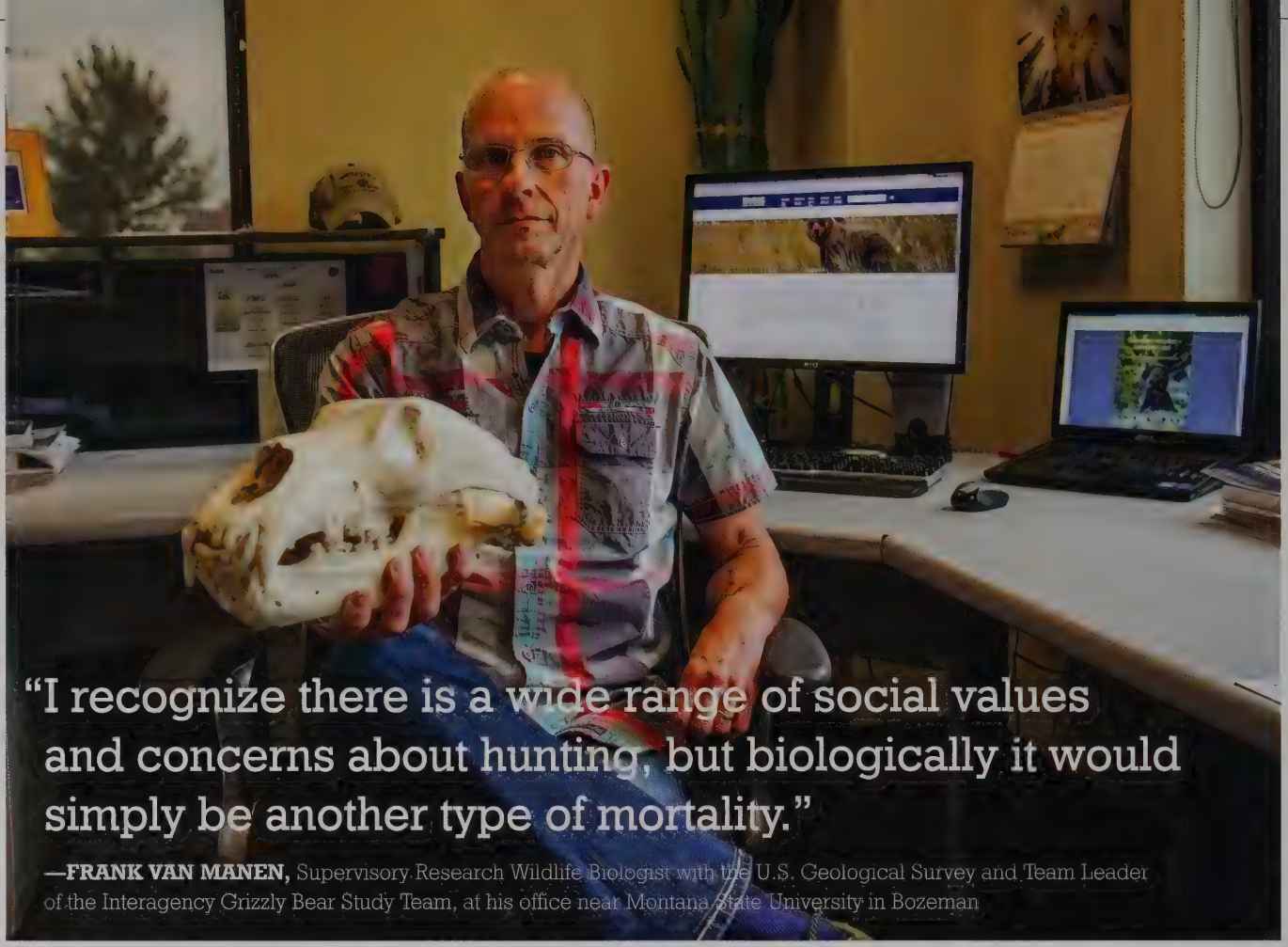
2003: Recovery goals are met for the sixth year in a row.

2007: The USFWS removes the Greater Yellowstone Ecosystem population from the threatened species list. Several groups file lawsuits challenging the decision.

2011: The 9th Circuit Court rules the grizzly bear should remain on the threatened species list. It says the U.S. Fish & Wildlife Service did not sufficiently address potential effects from reduction of whitebark pine and other foods.

2013: The Yellowstone Ecosystem Subcommittee and Interagency Grizzly Bear Committee recommend that grizzly bears be removed from the threatened species list because alternative foods are available and the reduction of whitebark pine is not significantly affecting bears.

2016: USFWS again proposes to delist the GYE grizzly.



"I recognize there is a wide range of social values and concerns about hunting, but biologically it would simply be another type of mortality."

—FRANK VAN MANEN, Supervisory Research Wildlife Biologist with the U.S. Geological Survey and Team Leader of the Interagency Grizzly Bear Study Team, at his office near Montana State University in Bozeman

person's rug or trophy," writes Todd Wilkinson of Bozeman in an opinion piece on the *National Geographic* website.

State wildlife agencies concede that some highly visible bears might be killed. But they are confident hunting will not hurt the overall grizzly population and will increase acceptance of bears by locals. The states have agreed to maintain a population of at least 674 grizzlies, the average of the study team's population estimates from 2002 to 2014, in an area comprising roughly 70 percent of the GYE known as the Demographic Monitoring Area. Highly regulated hunting would remove especially bold bears, increase grizzly wariness around humans, and reduce the number of bears visiting rural homes and communities. "As was the case with wolves, we believe that when we have a regulated hunting season, local animosity toward grizzlies will decline," says Ken McDonald, head of the FWP Wildlife Division.

For van Manen, hunting is a matter of public policy, not biology. "I recognize there is a wide range of social values and concerns about hunting, but biologically it would simply be another type of mortality," he says.

The real threat to the grizzly population, says van Manen and other grizzly experts, is growing human development in the region

Hunting and bear populations

Montana's black bear population, estimated at 13,000 animals, continues to thrive even as the game species is managed with regulated hunting.

The same would be true for grizzly bears. A certain number of grizzlies die each year from natural factors such as predation and disease, and human causes like vehicle collisions, self-defense, and lethal removal. The limited and highly regulated hunting seasons proposed by the states following delisting would not, when added to other mortality, be allowed to threaten recovery goals.

Under the GYE Grizzly Bear Conservation Strategy signed by the states, hunting would be allowed only if all other forms of mortality stayed below a certain percentage of the population necessary to keep it stable at a target of 674 bears, the average number from 2002 to 2014. (Hunting would never be allowed in Yellowstone or Grand Teton National Parks, though lethal removal by park rangers would continue if necessary.) If the population exceeded 674, more liberal hunting harvests would be allowed. If it fell below 674, hunting harvest would be severely curtailed. If numbers dropped below 600, no hunting would be allowed in any state.

Now that Yellowstone region grizzlies are recovered, hunting becomes a state concern, not a federal one, says Ken McDonald, head of the FWP Wildlife Division. He maintains that the intent of Congress in writing the Endangered Species Act was to address threats that drive a species toward extinction—not to forever dictate all the nuances of how a population might be managed. "Whether or not bears are hunted is way beyond the scope of the ESA, as long as the overall threat to the existence of the population is addressed," McDonald says. "And that is definitely the case with the protections, including overall mortality thresholds, that will be in place after delisting."

that increases the likelihood that bears will threaten people and need to be killed—in numbers that would far exceed the limited hunting harvest. The Yellowstone region is one of the fastest-growing rural areas in the United States. According to a new Montana State University study, the number of private land tracts with one home per 40 acres in the GYE increased 328 percent from 1970 to 2010, says Andy Hansen, director of the university's Landscape Biodiversity Lab.

OTHER LARGE CARNIVORES THRIVING

For many people, the delisting issue comes down to whether they trust the states to do right by grizzlies. Some claim federal officials are rushing delisting under pressure by state wildlife agencies eager to open hunting seasons so they can generate "big bucks" and drive populations down. "That's simply not the case," says McDonald. "In fact, *total* revenue from the relatively few licenses we'd sell would only be about $1,000 per year. And we have no desire to see the grizzly population substantially lower than it is today."

According to McDonald, managing Montana's grizzly bears now costs the state's wildlife agency $650,000 per year.

McDonald points to Montana's management of black bears, mountain lions, and wolves, all healthy big game species managed with regulated hunting seasons. Montana is also home to the even larger NCDE population, whose grizzly numbers have grown so robust that bears are spilling east onto prairie ranchlands and into towns.

What's more, says McDonald, "everything we've done to recover grizzlies, we'll keep doing to keep them recovered." Under an agreed-upon GYE Grizzly Bear Conservation Strategy, state and federal agencies will continue to monitor populations, food supplies, habitat threats, and bear mortality. The agencies have also designated a six million-acre Primary Conservation Area containing the highest grizzly densities where mining, logging, and energy development will remain severely constrained.

All three states have also agreed to jointly manage the GYE population as one population. "None of us can go rogue, off on our own," says McDonald. If any state reneges on the agreement or if grizzly numbers drop below 500, the USFWS could quickly relist the bears on an emergency basis.

If the states don't want to drive the GYE population down and won't profit from hunting, why the push for delisting? A big reason, says McDonald, is that it would boost the credibility of the ESA, already under attack by conservative members of Congress. "Keeping a species listed even after it greatly exceeds recovery goals undermines the Endangered Species Act itself and weakens local support and cooperation for listing other species," he says. Frey thinks delisting would give people who live in grizzly country more ownership. "With ownership comes responsibility, and I think people here accept that," he says. "But right now they don't feel that ownership."

From Frey's ground-level perspective, the future of GYE grizzlies will continue to depend largely on tolerance of bears by landowners, backpackers, hunters, and others living, working, and playing in grizzly country. "When a rancher knows we'll respond to his call about that one bear causing problems, he's far more likely to tolerate the other 10 or 15 bears that cross his land each year that don't create conflicts," he says. Responsiveness builds tolerance. Yet Fry often can't quickly settle grizzly issues because federal regulations require time-consuming procedures and approvals. "After delisting, we should be able to resolve conflicts much faster," he says.

The bear management specialist says he can't imagine the states ever allowing the grizzly population to reach a point where federal agencies would need to step back in. "I haven't been working on bears for 30 years just to sit back and watch them disappear," he says. Hundreds of bear-proof garbage cans in Big Sky, Red Lodge, Gardiner, and other towns are examples of how GYE communities are working not to eliminate grizzlies but to reduce conflicts and allow coexistence. Hunters and hikers in grizzly country carry bear spray both as self-defense and to prevent incidents requiring a bear to be killed. "I see a growing appreciation for bears in this state," Frey says. "My mom in Billings likes knowing Montana has grizzlies. But she sure wouldn't want them in her yard."

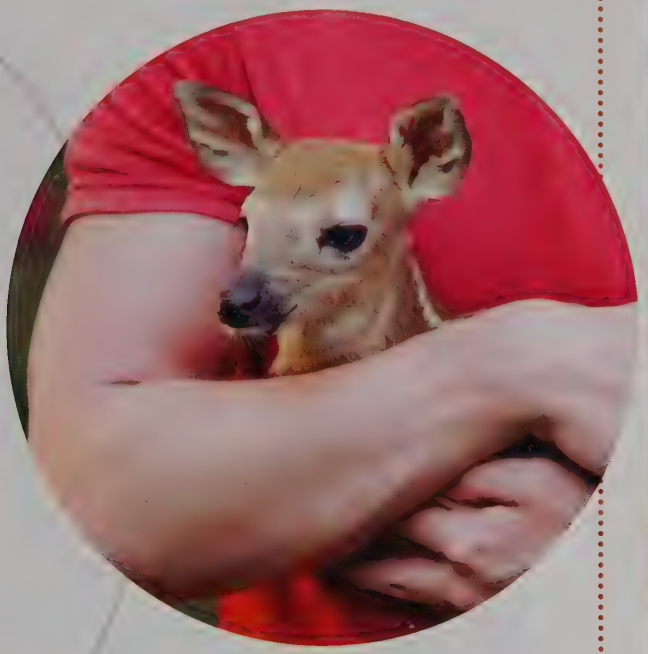
"Everything we've done to recover grizzlies, we'll keep doing to keep them recovered."

—KEN McDONALD, Wildlife Division Administrator, Montana Fish, Wildlife & Parks

CLOCKWISE FROM TOP LEFT: ERIK PETERSEN; SHAWN T. STEWART; MONTANA FWP

MACRO

and MICRO?



FWP sees populations. The public sees individual animals. Can the difference be resolved?

BY TOM DICKSON

Last spring a pair of barn swallows built a nest in Ken McDonald's garage. "We couldn't close the door all summer because they needed to get in and out to feed their four chicks," says McDonald, head of the Wildlife Division for Montana Fish, Wildlife & Parks. "Their death wouldn't have affected the barn swallow population in the slightest, but I knew those two adults had flown 5,000 miles from their wintering grounds in South America to get here. From a personal standpoint, I just couldn't do it."

Very few people are immune to the plight of animals—the pronghorn tangled in barbed twine, the black bear cubs bawling next to their dead mother along a mountain highway. Even hunters care about suffering. They practice marksmanship to ensure a quick, clean kill and diligently track animals they accidentally injure. As the South Dakota author Kent Meyers writes, "When we wound an animal, we are responsible for its pain."

The sociobiologist E.O. Wilson calls this universal need to identify with wildlife "biophilia," or our innate tendency to affiliate with other living things.

It's a paradox, then, that the employees of Montana Fish, Wildlife & Parks who are responsible for managing the state's wildlife can't always relate to animals as most people expect. They certainly care about wildlife; that's their job. But out of necessity they must, in their professional capacity, attend less to individual animals and more to wildlife populations.

That often puts FWP biologists and others in a tough position when someone brings them a sparrow with a broken wing or a seemingly orphaned fawn. "Unfortunately, we often have to tell people

LEFT TO RIGHT: DENVER BRYAN/IMAGES ON THE WILDSIDE; SHUTTERSTOCK

we just can't help," says McDonald. That can create an impression of a cold-hearted agency indifferent to wildlife—when in fact caring about wildlife, though at a different scale, is the department's primary concern.

"Many of us got into this business because of memorable experiences with individual animals."

"The most effective way to allocate our limited resources is to work at the population level."

Looking at the big picture

FWP's responsibility is to provide for the stewardship of Montana's wildlife. That means ensuring there is enough now and in the future for people to see, hunt, and otherwise enjoy, but not too much to create undue problems for landowners and others. Maintaining that balance is known as wildlife management—the science of manipulating wildlife populations and habitat to maintain a surplus for harvest, reduce private land depredation, recover endangered species, and meet other public needs.

For this to work, FWP must not consider one deer or duck at a time but rather entire populations of hundreds or thousands of deer and ducks. "It's about scale," says McDonald. "The most effective way to allocate our limited resources is to work at the population level."

Each FWP wildlife biologist is responsible for managing all wildlife species—game and nongame—in an area covering an average of 4,000 square miles. Managing so much wildlife over such a vast area requires large-scale activities, such as monitoring entire populations and protecting critical habitat, that benefit entire populations of multiple species for generations.

This macro approach works. In Montana, most wildlife populations—including large carnivores such as mountain lions, black bears, and wolves—are thriving in large part because biologists take a big-picture perspective. That's good for wildlife populations and all the individual animals within the populations.

Return to the wild

McDonald says that FWP recognizes both the macro and micro perspectives of wildlife. "Both views are valuable and necessary," he says. "And we continue to work on incorporating both into our overall management while considering our limited resources."

Though responsible for managing wildlife on a large scale, FWP Wildlife Division employees understand that people care about the plight of individual animals. And they recognize that a single porcupine or owl, when viewed up close by school kids and others, can inspire wonder and create

Tom Dickson is editor of Montana Outdoors.

LIFE, SHORT-LIVED

Wild animals, even cute babies, die. If they didn't, towns and neighborhoods would soon be overrun with wildlife. And the animals, exceeding available food supplies, would starve.

Nature is a place of tender wonders. It's also the scene of violence and death, where animals must kill other animals to survive. Ecologically, species like mice, voles, and rabbits that produce multiple litters each year provide predators with a steady supply of food. A "rescued" baby cottontail released back into the wild will likely be eaten by a predator within a few weeks. That's bad luck for the bunny but good news for the bobcat or hawk that brings the meal home to its young.

Adorable to us, but essential food to a hungry predator.

Because animals die with such regularity, from a biological perspective regulated hunting is simply another form of wildlife mortality. And because regulated hunting is based on sound science, wildlife biologists can ensure that it won't reduce populations except in cases where the goal is to lower numbers. That's true for all game species, including large carnivores. "Hunting doesn't threaten wolf, lion, or bear populations," says Ken McDonald, head of the FWP Wildlife Division. "That was the case 100 years ago, before the use of science-based quotas, seasons, and other strict regulations, but not anymore." ■

LEFT TO RIGHT: MICHAEL H. FRANCIS; MICHAEL HARING

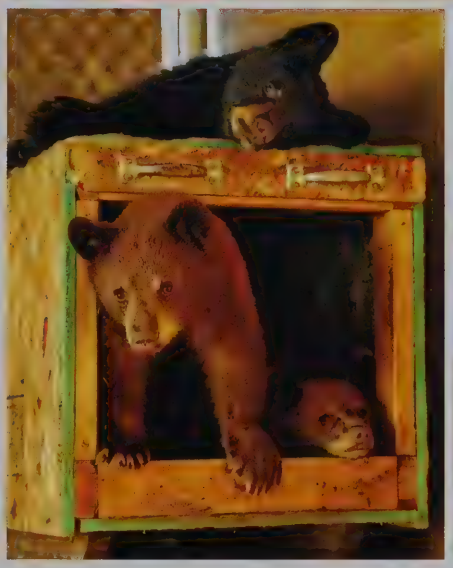
an interest in the natural world that can develop into a conservation ethic. "Many of us got into this business because of memorable experiences with individual animals," McDonald says.

Realizing that many Montanans want the department to do more to alleviate animal suffering, FWP's Wildlife Center in Helena rehabilitates black bear cubs, injured birds of prey, and several other species. Orphaned by hunting or vehicle collisions, young bears are rehabilitated, with minimal human contact, for several months before release back into the wild. Rehabilitated raptors also are released. Those too injured to survive in the wild are kept as "ambassador birds" for school groups and others to appreciate up close. (To prevent the spread of disease common among crowded wild ungulates, the center does not take in young or wounded elk, deer, or moose. Nor does it accept abundant, common species such as rabbits, squirrels, and songbirds.)

Another way FWP attends to the welfare of individual animals is by carefully regulating hunting. For example, the spring black bear season is structured to reduce the chance that a mother black bear will be shot and her cubs orphaned. State law makes it illegal to hunt any game animal with a spotlight, from an airplane, using bait, or employing other unfair methods. It's also illegal to harvest a spotted (young) mountain lion, or hunt elk before August 15 (to prevent orphaning dependent calves).

FWP responding to public concerns about the welfare of wildlife is not just empathy; it's also a prudent move by an agency responsible to a base of Montanans broader than hunters and anglers. As FWP looks for new sources of funding beyond traditional hunting and fishing license fees to meet growing management demands, it will need to demonstrate its relevance to people who care about wildlife but don't care to hunt.

Could FWP do more to address the welfare of individual animals? "We could," says McDonald, "but what we hear from most people is that they want us to keep putting most of our resources into protecting habitat and managing game and nongame populations." That way, FWP can continue to benefit far more wildlife than it ever could by addressing one animal at a time.



ONE AT A TIME Though FWP focuses mainly on landscape-level habitat and wildlife populations, it attends to some individual animals. At the FWP Wildlife Center in Helena (above), volunteer veterinarians and vet technicians help care for wounded eagles and other raptors. Below: After a rancher found this sick golden eagle, it was healed at the center and returned to the natural world. Left: The center also rehabilitates orphaned bear cubs for release back into the wild.

THE PARADOX OF "CARE"

Despite the good intentions, taking care of an individual animal is usually not in its or the caregiver's best interests. That's why it's illegal for people to capture and care for wounded or orphaned animals. A mountain lion kitten or bear cub hand-fed until adulthood and then released will associate humans with food. It will be unable to survive in the wild and could pose a danger to people as it scrounges for meals, requiring its removal. Wildlife also carry diseases they can transmit to pets or humans.

Mom is probably nearby, watching.

So-called "orphaned" animals usually aren't. A doe, for instance, regularly leaves its fawn hidden so it can feed nearby. Chicks often tumble out of nests to the ground for a few days before flying off. Removal of that fawn or chick, even temporarily, causes the mother stress and often results in the baby dying when it might have survived had it been left alone. ■

CLOCKWISE FROM TOP: JESSE LEE VARNADO; JESSE LEE VARNADO; DONALD M. JONES; JESSE LEE VARNADO

PRAIRIE PROTECTORS Henry Gordon and his daughter Trish, who now manages the family ranch, at the Gordon Cattle Company Conservation Easement near Chinook. "I thought it was a good way to save our prairie grass," Henry says.

SAVING THE BEST FOREVER

FWP conservation easements protect critical wildlife habitat and secure hunting access while sustaining family ranches. Will new landowners support those goals?

By Brett French. Photos by John Warner

At the age of 15—when most youngsters these days are just getting their driver's license—Henry Gordon's grandfather journeyed to America from Germany. He eventually settled on prairie lands in northern Blaine County and purchased what Gordon calls "the home place" in 1889. That's some deep roots in the topsoil of Montana's plains. "We've been here quite a while," Gordon says.

To honor the family legacy, Gordon is preserving the native grasslands that fed the cattle that sustained his ancestors. He is also protecting wetlands and conserving wildlife such as white-tailed and mule deer, sage-grouse, waterfowl, and even swift foxes, a state species of concern. Gordon accomplished these lofty goals by working with Montana Fish, Wildlife & Parks in 2002 to create the 15,000-acre Gordon Cattle Company Conservation Easement (CE) north of Chinook.

"I guess what really encouraged me to sell the easement more than anything else was how these young 'entrepreneurs' around here are tearing up the native ground to make a profit," says the 66-year-old rancher. "I thought this was a good way to save our prairie grass. It's worked out well."

KEEPING LAND PRODUCTIVE

Montana appears to be overflowing with farmland, yet many of the most productive lands along river bottoms have been converted to housing and highways. According to American Farmland Trust, Montana has lost 204,100 acres of prime farmland to development since 1982—much of it in wildlife-rich river valleys with sweeping mountain views.

Tempted by real estate developers' lucrative offers and pressured by rising property taxes, a growing number of landowners have turned to conservation easements to hold on to their property. From the prairies of eastern Montana, to the foothills and dark forests west of the Continental Divide, conservation easements protect both critical wildlife habitat and family farms. The easements are voluntary legal agreements between a landowner and a land trust nonprofit (see sidebar, page 32) or public land management agency such as FWP. On FWP conservation easements, the landowner restricts certain development on the property, such as subdividing parcels, plowing native grasslands, or leasing land for hunting, in exchange for a one-time payment of roughly 40 percent of the property's

value. That cash allows struggling ranchers to stay on their land and even helps pay inheritance taxes.

Landowners either sell or donate easements to FWP while maintaining ownership of the land. The property can be sold or passed on to heirs and allows for continued farming, ranching, and other private use under certain conditions. "Many people don't understand that conservation easements help landowners keep doing what they've been doing, which is working the land," says Rick Northrup, chief of FWP's Wildlife Habitat Bureau. The land also remains on the county tax rolls.

Brett French is outdoors editor for the Billings Gazette. *John Warner is a freelance photojournalist in Billings.*

FWP conservation easements protect the state's most important wildlife habitats—riparian (riverside) areas, intermountain grasslands, and sagebrush-grasslands—that are vulnerable to subdivision development and intense agricultural practices. Almost all provide public hunting access.

"One big difference between FWP easements and most others is our requirement for public access," says Ken McDonald, head of the FWP Wildlife Division. "We are also about the only ones whose conservation easements include management plans with details about public access and grazing."

HUNTERS' DOLLARS AT WORK

The first substantial FWP easement was the 1994 Brewer Ranch CE, which protects about 18,000 acres across Powder River and Custer Counties. Since then, FWP has acquired—either by purchasing or through donations—another 62 conservation easements statewide for a total of 458,824 acres safeguarded from development.

The easements are financed largely through the Habitat Montana Program, funded by hunting license fees. The program collects about $4 million a year. "These are hunters' dollars being put to work for hunting and wildlife," says Northrup. Donations from many conservation groups assist in easement purchases.

To help buy easements in western Montana, FWP applies for competitive grants from the Forest Legacy Project, administered by the U.S. Forest Service. The federal agency stipulates that Forest Legacy dollars be used to conserve threatened forests that provide timber harvest, wildlife habitat, and public access. Most FWP conservation easements funded with Forest Legacy dollars have been purchased from timber companies.

For instance, Stimson Lumber Company sold FWP a 28,000-acre easement near

> **"People want to use that public ground, so why not get along with 'em and put it in Block Management."**

GOOD FELLOWS Henry Gordon shares a laugh with his neighbor, Terry Swank.

Troy that contains critical habitat for grizzly bears, wolves, Canada lynx, bull trout, and westslope cutthroat. It's also prime timber land. "The attraction for us, as we look at our lands and where our mills are, is that it's getting harder and harder to make timber work for the long term," says Barry Dexter, inland resource manager for Stimson. "We were willing to give up first development rights for that harvest income."

COFFEE TALK

Most FWP conservation easements start as conversations between a landowner and a wildlife biologist. In his 13 years with the department, FWP biologist Cory Loecker, based in Great Falls, has helped negotiate four easements protecting valuable riparian habitat along the Missouri River near Cascade, as well as one in the Arrow Creek Breaks east of the Highwood Mountains. "I've had a lot of coffee at kitchen tables," says Loecker. Just as important as what he says to landowners about the value of conservation easements, however, is what other easement holders say. "Landowners all know each other, so they can visit with a neighbor and see how the easement works and decide if it would work with their operation," he says.

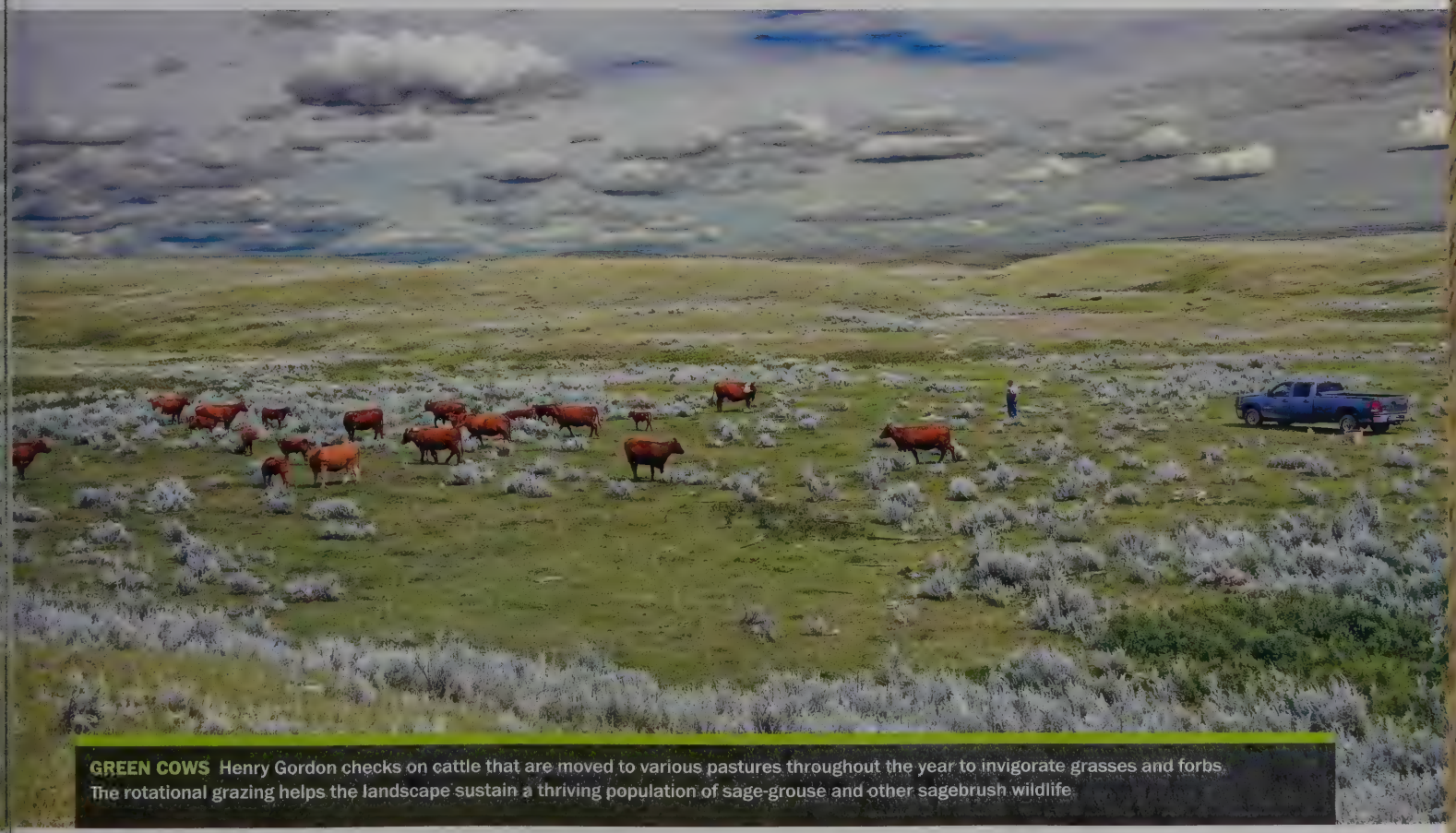
Loecker grew up in northeastern Nebraska along the Missouri River, where much riparian agricultural land and wildlife habitat has been developed into housing. "If they can get a bulldozer in there, they will," he says. "So it's pretty cool for me to help protect some of this land along the upper Missouri in Montana."

Loecker worked with landowners Jim and Cindy Kittredge on the 2,292-acre Bird Creek Ranch CE. The diverse and scenic mix of hardwood forest, wetlands, streams, native grasslands, and farmland sits along three miles of the Missouri River near Cascade. The Kittredges raise Icelandic sheep and Highland cattle on their property, which includes an American Indian historical site and holds white-tailed and mule deer, pronghorn, upland birds, waterfowl, and nongame wildlife including herons, shorebirds, and nesting bald eagles.

The scenic ranch, with sweeping views of the Missouri River and Square Butte to the west, is just 20 minutes from Great Falls. "We were constantly getting calls from real estate people asking to buy the ranch for subdivisions like the ones spreading like a virus on the other side of the river," says Cindy Kittredge, who grew up on the property. "One reason we sold the easement was to draw a line in the sand that said, 'This land must be preserved.'" Another reason was to show that a productive landscape can work in balance with a wild one. "When the two work in harmony, like we're doing here, it's a wonderful thing," she says.

SEWING TOGETHER MILK RIVER HABITAT

FWP often tries to acquire conservation easements that connect existing easements and other protected lands. When linked, habitat is even more beneficial to wildlife because it allows for greater unobstructed movement. One of the department's most ambitious conservation easement plans is



GREEN COWS Henry Gordon checks on cattle that are moved to various pastures throughout the year to invigorate grasses and forbs. The rotational grazing helps the landscape sustain a thriving population of sage-grouse and other sagebrush wildlife.

the Milk River Initiative. Started in 2007, the project aims to conserve a series of prime wildlife habitats along the meandering river from Havre to Glasgow.

The initiative had a sizable chunk of ground to build upon: the 3,800-acre Tampico Ranch CE acquired in 1994. "That's our biggest conservation accomplishment so far along the Milk," Northrup says. Since then, FWP has added five easements as well as one fee title purchase of 400 acres made into a wildlife management area. FWP also manages six other wildlife management areas along this stretch of the Milk River. In total, 13,000 acres of prime wildlife habitat have been conserved.

Northrup says FWP focused on the Milk River because the wildlife-rich riparian habitat continues to be converted to cropland and housing. In addition, many properties are being tied up with hunting leases or purchased by out-of-state landowners who don't provide public hunting access.

Bernie Hart sought out the department to create a conservation easement on his 402 acres at the confluence of Beaver Creek and the Milk River about 20 miles northwest of Glasgow, near Hinsdale. For years Hart has shared his land with the public. Anglers have caught 12 different species of fish, including a 22-pound northern pike, a 9-pound walleye, and a 12-pound catfish. Hunters pursue white-tailed deer and pheasants. "People appreciate this, and that gives you a great feeling," he says. Hart, 74, adds that a neighbor also has put a portion of his land into an FWP conservation easement. "Large parcels like this are what's necessary for wildlife," he says.

MORE BANG FOR THE BUCK

Why doesn't FWP just buy prime habitat from willing sellers and make them into wildlife management areas? Often it does. "But other times we can get more bang for the buck with an easement," says McDonald. "And sometimes landowners prefer to sell or donate the easement to us so they can continue working the land and pass it on to

CONSERVATION COUPLE Cindy and Jim Kittredge with Highland cattle on their wildlife-laden 2,292-acre ranch near Cascade. They sold a conservation easement to FWP in 2007.

> **"Other people might have the right to develop their land in ways that can ruin it forever, and we have the right to protect our land forever."**

Other conservation easements in Montana

FWP's 458,824 acres of conservation easements comprise roughly one-fifth of the more than 2.5 million acres of conservation easements in Montana. Many other groups also purchase or receive donations of easements, including The Nature Conservancy, Montana Land Reliance, Rocky Mountain Elk Foundation, and Gallatin Valley, Flathead, Five Valleys, Bitter Root, and Prickly Pear Land Trusts.

"We're proud that Montana has conserved all these acres," says Glenn Marx, executive director of the Montana Association of Land Trusts. "But it's a common misconception that because the number of conservation easements has grown over the years, the amount of open land in Montana has increased, too. It hasn't. Pretty much every day someone, somewhere converts Montana farm or ranch land to another use." That's okay, says Marx, who knows that Montanans want economic development and new job opportunities. "But it's a good thing—as we grow our economy and as our population grows—that landowners work with land trusts and agencies like FWP to conserve priority habitats and farmlands," he adds. "These easements conserve some of the best Montana has to offer."

Montana's largest easement holders
(by acreage)

Montana Land Reliance	945,070
Montana Fish, Wildlife & Parks	458,824
U.S. Fish & Wildlife Service	357,142
The Nature Conservancy	348,925
State of Montana	146,996
All other easement holders (combined)	312,394

SOURCE: NATIONAL CONSERVATION EASEMENT DATABASE

their kids." Another advantage of easements over fee-title acquisitions: lower long-term fence and road maintenance costs for FWP.

So that conservation easements benefit wildlife and the hunters who pay the lion's share of costs, the legal contracts contain specific provisions for land management and public access. FWP negotiates management plans with the landowner until both parties reach agreement. Many FWP easements stipulate grazing to be done on a rotational schedule to invigorate shrubs, grasses, and forbs. On the Tampico Ranch CE, the management plan required seeding 350 acres into dense nesting cover for upland birds and waterfowl. Haying is allowed on the ranch's ungrazed fields, but only after birds have finished nesting, to prevent machinery from killing broods.

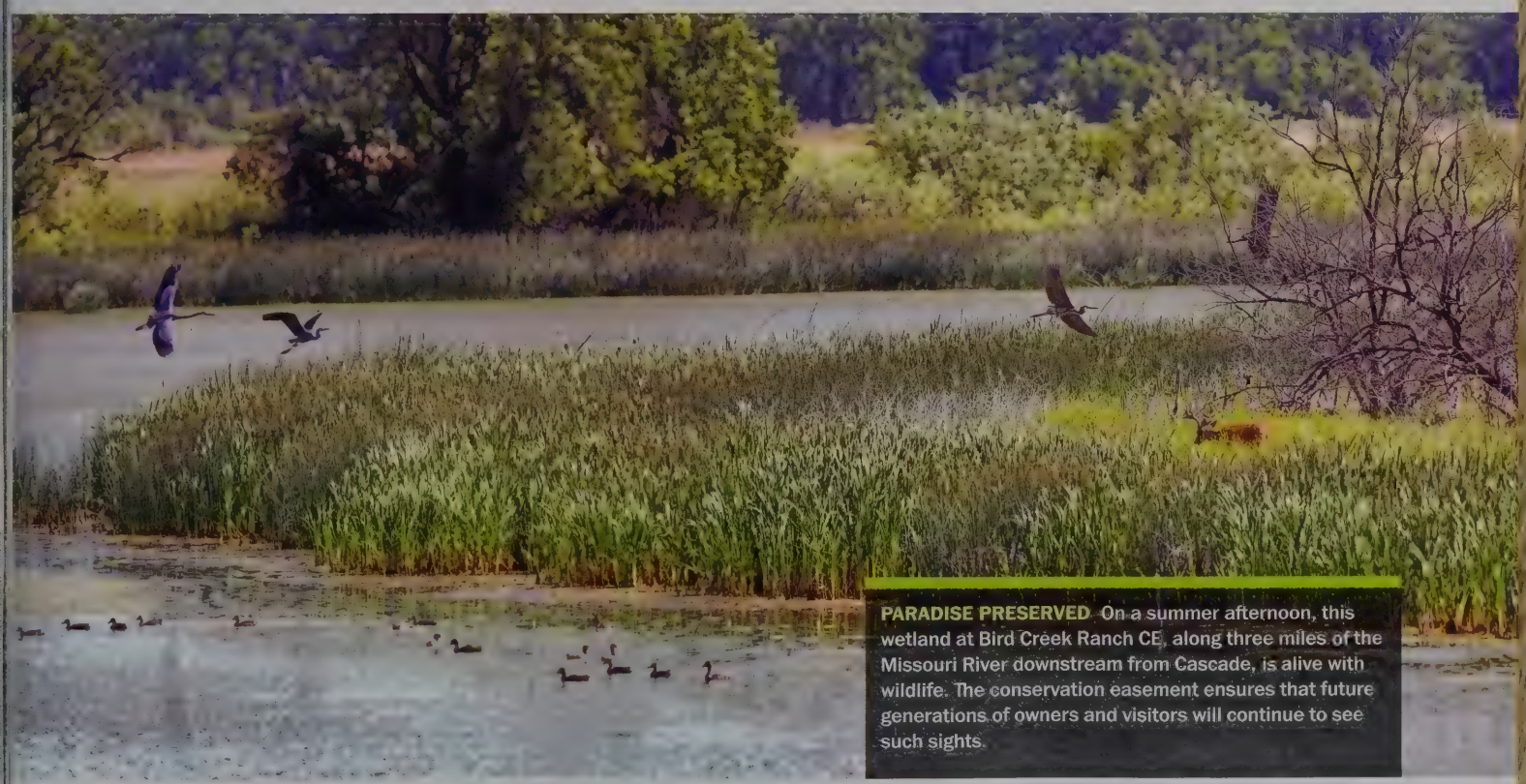
Terms for public access differ on each easement. Many are enrolled in the Block Management Program and offer access similar to other private lands posting the bright green signs. The Gordon Cattle Company CE is enrolled as two Block Management Areas. The areas intermingle with federal Bureau of Land Management and state Department of Natural Resources and Conservation properties, providing access to those lands as well. "People want to use that public ground, so why not get along with 'em and put it in Block Management," Gordon says of his property.

To ensure landowners comply with the agreements, Kevin League, FWP conservation easement stewardship manager, monitors easements throughout the year. "I look for any new disturbances on the property and interview the landowners to see what's going on," League says. "Usually it's within the agreement and there's no problem. Much of what I do is just maintain good relations with the landowners."

Conservation easements are perpetual, meaning the land management and development stipulations last forever. Most conservation-minded heirs welcome the restrictions. Henry Gordon says his daughter Trish, who now manages the ranch, was "all for" the FWP conservation easement. But because easements are still relatively new in Montana, the provisions can frustrate some new owners or heirs. League says dealing with second-generation landowners or buyers is sometimes harder than working with the conservation-minded person who established the easement. "It can be a challenge working with someone who wants to develop and can't, because conservation easements are legally binding and can't be broken," League says. "They're written into the deed, so prospective property buyers should be aware of the stipulations before they make a purchase."

Those restrictions are there for good reason. Conservation easements exist to protect critical wildlife habitat, not for just a few decades but for all time. One of the biggest benefits to landowners from the agreements is that their vision of their land is preserved. "We view those protections as a property right," says Cindy Kittredge. "Other people might have the right to develop their land in ways that can ruin it forever, and we have the right to protect our land forever. We see conservation easements as a tool for enshrining that property right."

Hunters interested in finding locations of and access conditions on FWP conservation easements can use the department's web-based Hunt Planner or call the regional FWP office and ask for information on conservation easements.



PARADISE PRESERVED On a summer afternoon, this wetland at Bird Creek Ranch CE, along three miles of the Missouri River downstream from Cascade, is alive with wildlife. The conservation easement ensures that future generations of owners and visitors will continue to see such sights.

The Mountain Man,
by Paul Calle (1928-2010)
calleart.com

The Mountain Men of Montana

EVEN WITH THE CONSTANT DANGER, PHYSICAL HARDSHIP, AND ENDLESS ISOLATION, THEY LIVED WHAT SEEMED TO BE FREE, INDEPENDENT LIVES THAT MANY OF US DREAM OF HAVING.

BY PJ DELHOMME

In an Oscar-winning performance by Leonardo DiCaprio in the 2015 movie *The Revenant*, mountain man Hugh Glass crawled, swam, and hobbled across the winter wilderness of today's western South Dakota after barely surviving a grizzly attack and being left for dead by his companions. Outdoorsmen and outdoorswomen in movie theaters everywhere watched and wondered: "How would I fare in his frozen moccasins?"

Americans have been fascinated by early hunters, explorers, frontiersmen, and trappers for nearly as long as the country has existed. Daniel Boone and Davy Crockett became folk heroes starting in the 18th century, their fame continuing well into the mid-1900s with films, radio broadcasts, and TV shows. Today reenactors decked in authentic drop-front pants and pullover shirts gather at tent-filled trapper "rendezvous" for mountain man activities like shooting muzzleloaders, tossing tomahawks, and swapping tanned furs and hides. Even bearded, plaid-shirted craft-beer urbanites of Brooklyn and Seattle are paying homage to men who, 200 years ago, trapped and traded beavers for a living.

In a modern life increasingly constrained by deadlines, text messages, and traffic, the appeal of frontier life is broad and deep. Mountain men (a category that includes some women) appeared to live simple, unrestricted lives, beholden to no one. As one character says in the 1980 movie *The Mountain Men*, "I can still walk for a year in any direction with just my rifle and a handful of salt and never have to say 'Sir' to nobody. I reckon that's free."

Mountain men come from a time in which many of us wish we had played a part. They saw the West before highways, cities, and farm lands obscured so much

of its grandeur. They had discovered someplace special, and they knew it.

Frontier life wasn't easy. To survive took grit, skill, and luck. Many who came to a place like Montana Territory were buried not long after leaving the cobbled streets of St. Louis or Chicago. But some of those who survived became the stuff of legend.

Many accounts of mountain men in Montana Territory are of dubious origin. Few frontiersmen wrote books or even kept journals. Many tales are just that, embellishments of overly imaginative novelists and reporters more than willing to accommodate eastern readers eager for stories of western adventure and heroism. Yet whether the accounts are fact or fiction, it's fun to imagine what it must have been like to be a mountain man—and how and even if we would have survived as one ourselves.

Here, to feed your imagination, are a few of the more famous mountain men who spent time in today's Montana.

John Colter 1774-1813?

Colter was as mountain man as a man could be. By all accounts, he should have perished a dozen or more times while exploring the area now known as Montana, including one incident in which he had to wade into the Missouri River to outmaneuver a pursuing grizzly.

Colter enlisted in Lewis and Clark's Corps of Discovery while in his early 30s and proved himself a competent hunter and interpreter. On his way back east from Oregon with the corps, Colter received permission to leave the expedition and join two trappers in Montana and Wyoming. In the winter of 1807-08, he traveled solo into the Grand Tetons. He became the first person of European descent to see that mountain range and the area that later became Yellowstone National Park.

Colter helped build Fort Raymond, or Fort Lisa, at the confluence of the Bighorn and Yellowstone Rivers in present-day Montana. He made the first English language reports of geysers and fumaroles, later dubbed Colter's Hell, near today's Cody, Wyoming.

The frontiersman is best known for his barefoot escape from Blackfeet Indians. In 1809, Colter and his partner John Potts canoed up the Jefferson River into prime beaver country. The pair encountered several hundred Blackfeet. Potts tried to flee and was instantly riddled with bullets and arrows. Colter put his paddle down and came ashore. He was then stripped of clothes and shoes and told to run, which he did. Warriors gave chase and he managed to escape by outrunning all but one, whom he was able to kill. He eventually jumped into the Madison River, five miles from where his run began. Wrapped in a blanket he'd taken from the man he'd killed, Colter hid in a beaver lodge, only his nose breaching the water surface, as the Blackfeet searched for him. After his pursuers gave up, Colter walked 200 miles back to Fort Raymond. After returning to Missouri and settling down into family life, he died of jaundice at around age 40.

George Drouillard 1775-1810

Lewis and Clark's backcountry Renaissance man, George Drouillard helped the Corps of Discovery navigate, scout, interpret, and, of course, hunt on their exploration west and back again. In his journals, Lewis wrote of Drouillard, "I scarcely know how we would subsist were it not for the exertions of this excellent hunter." Drouillard hunted all of what would later become Montana, from the breaks of the upper Missouri River to the dense thickets of the Bitterroot Mountains. He was confident, bordering on cocky, and

that's likely what caused his downfall.

The son of a French Canadian father and Shawnee mother, Drouillard had a foot in both cultures. He was fluent in the sign language used by many tribes, making him invaluable for Lewis and Clark's long trip up the Missouri. He was 28 when hired by the explorers in 1803. After the Corps returned to St. Louis, in 1806, Drouillard turned right around and headed west again. For four years he trapped the upper Missouri and Yellowstone Rivers. In 1810, trader and entrepreneur Manuel Lisa sent a team, including Drouillard and John Colter, to establish a fort where few others dared: at the Three Forks of the Missouri. The land was rich with beaver but patrolled by members of the Blackfeet and Gros Ventre tribes. After continual attack by Indians, the trappers gave up and abandoned Fort Henry. Colter settled in Missouri and became a farmer. Not Drouillard.

In early May 1810, he and 21 other trappers set their traps up the Jefferson River, the same river where Colter had nearly been killed the year before. Drouillard did especially well and boasted of his spoils. Not long after, two miles from camp, Drouillard was ambushed by Indians and killed.

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Jim Bridger 1804-1881

Jim Bridger spent only a short time in Montana Territory. But he left a permanent mark on both the landscape and all who heard his stories of the frontier.

Born in Virginia, Bridger was destined for the West. Before his parents died, when he was 13, they'd moved him and his sisters to St. Louis. Boats laden with beaver pelts, buffalo hides, and bearded mountain men regularly streamed down the Missouri River into town. Bridger first worked as a blacksmith's apprentice. When he saw an ad in the local paper calling for young men who yearned for adventure out West, he joined future frontiersmen legends Hugh Glass, Jedediah

Smith, Jim Beckwourth, and others as a member of the Rocky Mountain Fur Company. The other members were expert trackers, hunters, and trappers. A young man couldn't have asked for a better apprenticeship.

Bridger's stint as a blacksmith had honed his muscles, making him stronger than his tender age would warrant. He was smart, too. A rival fur-trading company followed Bridger and his companions to their coveted fall trapping grounds. Bridger realized this and led his company into hostile Blackfeet territory, where the party following them was promptly attacked.

Word of his grit spread too. Once, during a struggle with several Blackfeet, he took two arrows in his back. Bridger left one of the three-inch-long arrowheads in for three years. He finally had it removed (without booze to deaden the pain) by a doctor at a mountain man rendezvous. A week later, he was back on his horse guiding a group into Jackson Hole.

Though one of the youngest scouts called upon by the Army to lead wagon trains out West, Bridger was considered among the best. After gold was discovered in Alder Gulch, in today's southwestern Montana, Bridger was assigned to lead a wagon train to mines in nearby Virginia City. The Bozeman Trail, which at the time went from Fort Laramie in southeastern Wyoming north along the east side of the Bighorn Mountains, was considered too dangerous. The route went through lands guaranteed by the Fort Laramie Treaty to the Lakota and Northern Cheyenne Indians, who defended it fiercely. So Bridger blazed a new trail that went up into Montana Territory along the west side of the Bighorns. With 300 immigrant miners and 62 wagons, Major Bridger led his party to Livingston and then west up and over what was then Bridger Pass, now known as Bozeman Pass.

At the end of the Civil War, Bridger was in his early 60s and left the mountains for a farm in Missouri. He died at 77, leaving behind children, grandchildren, and innumerable stories of the American frontier. South-central Montana today contains several "Bridger" references, including a mountain range, ski area, and town.

Jeremiah "Liver-Eating" Johnston 1824-1900

As a boy, I watched the 1972 classic, *Jeremiah Johnson*, over and over until the tape eventually was consumed by the VCR. The movie is loosely based on the life of John Garrison, whose life—much of it spent in Montana Territory—is an even greater bundle of lore, fantasy, and downright fairy tale than what the film presented.

What we know for fact is that Garrison was born in New Jersey to a surly, alcoholic father who worked his six children to the bone. To escape, Garrison fled to a whaling schooner, where he worked for more than a decade. After enlisting in the Navy, he punched an officer and fled West. Because he

had deserted, he changed his name to Johnston. That's when the tales begin.

The best-known centers on a quest for vengeance. Legend has it that Johnston married Swan, daughter of a Flathead chief. Johnston left his bride behind one winter to trap, only to return to find her murdered by the Crow. He went on to kill dozens of Crow warriors, carving out their livers (which he is rumored to have eaten). When the Blackfeet captured him for the bounty the Crow had put on his head, Johnston chewed through his rawhide handcuffs, knocked out a guard, and cut off the man's leg, which he supposedly used as a food source during the following winter as he traveled 200 miles back to his cabin.

It's an amazing story—except that some documents indicate Johnston was still serving in the Navy when this adventure supposedly took place.

Either way, we know Johnston eventually moved to Coulson (now Billings) to work as a deputy sheriff. He built a cabin in the woods near Red Lodge, where he spent all but the last year of his life. He died in 1900 at the National Soldiers' Home in Santa Monica, California.

LEFT TO RIGHT: PAINTINGS OF JOHN COLTER AND GEORGE DROUILLARD BY MICHAEL HAYNES; KANSAS HISTORICAL SOCIETY; UNIVERSITY OF MONTANA MAUREEN AND MIKE MANSFIELD LIBRARY.

Stagecoach Mary Fields 1832-1914

Drinker, brawler, baseball fan, restaurateur—the list of adjectives and occupations for Montana's liveliest pioneer woman is long. A former Tennessee slave who found her freedom after the Civil War, Mary Fields was a six-foot-tall, 200-pound solid mass of pure force. She got her name because she would always deliver (on time) the mail in and around the town of Cascade, regardless of weather or road conditions. She was the first African American and only the second woman to manage a mail route in the United States, a job she had earned by hitching a team of six horses faster than all the other applicants.

She came to Montana Territory to nurse back to health her good friend Mother Amadeus, whom she'd met in Ohio and who had been sent West to establish a school for Native American girls at St. Peter's Mission,

west of Cascade. After the nun recovered from pneumonia, Fields settled in the town. At a time when women (other than prostitutes) avoided saloons, Mary loved to drink at the bar alongside the men. If one got wise or gave her a hard time about being in the bar, she'd be more likely to punch him in the face than ask for an apology. Legend has it that while having a drink, she saw a fellow out on the street who owed her money. She ran him down, grabbed him by the scruff, broke his nose, and declared, "His debt is now paid."

As rough as Fields appeared and behaved, she could be sweet, too. She was the Cascade baseball team's biggest fan, placing flowers from her garden in the players' buttonholes. Big hitters would get a bouquet. She cared for nearly every child in town at some point, many times spending her earnings on treats for the kids. One of the children Mary influenced was Gary Cooper. The famous actor later recalled the meeting in a 1959 article for *Ebony*, writing, "Mary lived to become one of the freest souls ever to draw a breath, or a .38."

Andrew Garcia 1853-1943

Perhaps Montana's "last best" mountain man, Andrew Garcia saw the curtains close on the western frontier while he was still playing his part. He recorded his wildest days on thousands of pages stashed away in old dynamite boxes at his ranch near present-day Alberton, northwest of Missoula. Unlike other mountain men and women of the frontier, he could read and write, leaving us with more than just tales of dubious validity and origin.

Garcia was born in the Rio Grande Valley of south Texas. At 23 he made his way north to Montana Territory as a U.S. government packer and herder at Fort Ellis in Bozeman. There he met a raging alcoholic trapper named Beaver Tom. Garcia saw no need for drink and didn't know how to gamble, which, as he wrote, was the only thing to do in the West on your time off. As a result, he had saved quite a bit of his salary. Beaver Tom was an experienced trapper who needed someone to bankroll his trapping habit. He talked Garcia into venturing east into Montana's Musselshell country to trap and trade. Garcia's autobiography, *Tough Trip Through Paradise*, begins that year, 1878.

The book is a colorful, no-holds-barred romp through the last of Montana's frontier. Garcia recounts his time trading with, running from, chasing after, and marrying into Native American tribes across today's central Montana.

But before he can actually trap or trade,

Garcia struggles to keep Beaver Tom from drowning himself in whiskey. In one passage, Tom had gone on a three-day bender, replacing food with whiskey. After Garcia watched the drunk trapper crawl around on all fours and toss imaginary rattlesnakes out of camp, he decided to sober the man up. In a skillet, Garcia boiled up a tonic made of several scoops of old bear grease, pepper, and whiskey and forced Tom to drink the concoction under threat of murder.

In addition to his medical "wisdom," Garcia shares in his autobiography snippets of sage frontier advice such as, "They say in case of fire, it is always good to go to bed wearing your pants."

Apparently, Garcia didn't especially want to see his tales published. His white family disapproved of his previous Native American wives, as did Gladys, his final wife. Yet thankfully for anyone later interested in frontier life, the 75-year-old mountain man sat down in 1928, at the urging of a historian, and wrote of his time on Montana's frontier.

LEFT TO RIGHT: WIKIPEDIA; MONTANA HISTORICAL SOCIETY ARCHIVES

P J DelHomme is hunting editor for Bugle, *the magazine of the Rocky Mountain Elk Foundation, based in Missoula.*

Antlers big and small

by Bruce Auchly

It's that time of year when hunters talk about antlers.

The discussions happen all fall but really pick up during Montana's five-week deer and elk general season, which started October 22. That's probably because so many people are afield now: about 240,000 gun hunters versus maybe 40,000 archers back in September at the peak of archery season.

Also, it seems every hunter wants a trophy rack to hang on the wall at some time in his or her life. Even many meat hunters will admit to wanting just one big bull elk or buck deer before they head to the happy hunting grounds in the sky.

All that antler lust has spawned misperceptions about what it takes for a male deer or elk to grow a big rack.

First, deer and elk grow antlers, not horns. Most people know the difference—antlers grow only on male members of the deer family, and they fall off each spring and grow back during summer. Most people also know that horns are permanent and found on mountain goats, bighorn sheep, and bison.

As is so often true in nature, there are exceptions. Both male and female caribou, a member of the deer family, have antlers. And though antelope (pronghorn) have horns, they shed the outer covering, or sheath, each year.

To add to the confusion, some of the people who collect the antlers that deer and elk drop call themselves "horn hunters."

Genetics, nutrition, and age play major roles in horn growth. Generally, genetics determines the form of antlers while nutrition and age dictate size.

Inheritance seems easy enough to understand. A mature bull elk with seven perfectly symmetrical antler points on each side of its head will likely produce equally impressive male offspring.

As for age, the longer a bull or buck lives, the bigger its rack grows—to a point. Once the animal reaches extreme old age, antler size declines.

Not all bulls or bucks grow a trophy rack, no matter how nutritious their diet. Some mule deer, for example, may never grow antlers larger than two points on one side and three on the other, measuring 16 inches at the widest. Those deer carry what could be called a "small-antler" gene.

One study of white-tailed deer compared the offspring of yearling (one-and-a-half-year-old) bucks that had relatively large-branched antlers to the offspring of yearlings that had only spike (small, unbranched) antlers. Both sets of the captive deer were fed identical diets. The yearlings with larger antlers sired only 5 percent spikes, while the spike yearlings produced 44 percent spike-antlered yearlings.

The study concluded that if hunters want to see more large-antlered deer, they need to harvest more spike yearlings and allow bigger-racked yearlings to survive and pass on their genes.

Regarding nutrition, scientific evidence shows that diet greatly influences antler growth. One study of mule deer showed that in wet years, when more nutritious vegetation is available, there are fewer spike yearlings and more yearlings with forked antlers.

What's it all mean? Given the right forage conditions and genetics, and allowed to live for at least a few years, buck deer or bull elk can sprout impressive antlers.

But it's still up to us hunters to get out there and find them.

Bruce Auchly manages the FWP Regional Information and Education Program in Great Falls.

ILLUSTRATION BY E.R. JENNE

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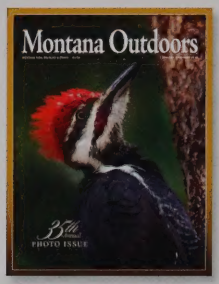

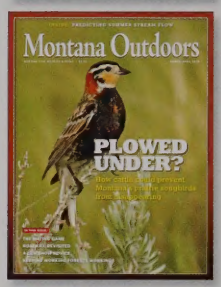

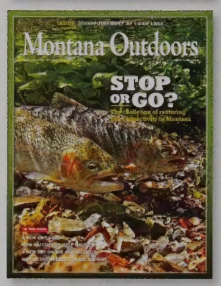

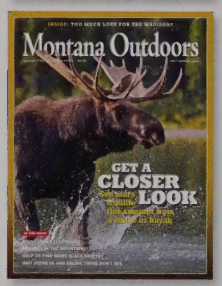

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35th Annual Photo Issue

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Snow Men Predicting summer stream flows requires dangerous high-altitude expeditions in late winter and early spring. By Hal Herring

Time To Mate? The amazing strategies mammals have devised for determining when to reproduce. By Kerry R. Foresman

Pistol Whipped Turns out a gun is only worth what someone is willing to pay for it. By Michael J. Ober

From Freeway to Freezer How to avoid colliding with a deer, elk, moose, or pronghorn. And some good news if you do. By Jess Field

Kids on Ice FWP's "hard-water" clinics get kids outdoors and teach them to catch fish and understand underwater biology. By Amber Steed

Cow or Plow Cattle need grass, which makes ranching the best hope for grassland songbirds. By Catherine Wightman

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Musselshell Makeover How the people in this central Montana watershed found a way to share water from—and restore function to—the river running through their lives. By Brett French. Photos by John Warner

Ugly Discovery at Swan Lake The Fish and Wildlife Commission takes an unprecedented step to stop illegal fish introductions after walleyes are found in a scenic northwestern Montana lake. By Tom Dickson

We Know You're in There Geneticists use new eDNA science to quickly and accurately identify fish species in streams and lakes and trace the origins of individual fish. By Ladd Knotek

Chucking Big Buggers for Big Browns It's not the most elegant fly-fishing technique. But it is the best way to catch trout the length of your arm. By John Holt

Raceways to the Rescue The surprising story of how FWP fish hatcheries help Montana conserve native populations and restore federally listed species. By Paul Queneau

Open or Close? Why connectivity is essential for native fish populations—except when it isn't. By Tom Dickson

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A Bumbler Fishes Through It I was no Brad Pitt, but I decided I had to learn how to catch a trout with a fly. By Ben Long. Illustrations by Mike Moran

Deadly Decoration When ospreys line their nests with baling twine, the results can be grim. By Alyse Backus

The Price of Popularity Anglers, kayakers, boaters, and innertubers love the scenic, sunny, trout-filled Madison River. That's the problem. By Ben Pierce

A Black Flash in the Mountain Sky It nests behind remote waterfalls, flies high beyond human sight, and winters in places unknown. As it has for more than a century, the black swift remains Montana's most mysterious bird. By Ellen Horowitz

A Great Place To Be a Curlew Thanks to ranchers, tribal leaders, and other conservationists, the Mission Valley's intermountain grasslands still provide abundant habitat for the nation's largest shorebird and other wildlife. By Ben Long

Sneaking in to Wildlife Havens By quietly cruising down a river in a canoe or kayak, you can see more birds and mammals than you ever thought possible. By John Manuel

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A Shot Worth Taking Why Montana still allows sage-grouse hunting. By Ben Pierce

The Perfect Day The good news, I told myself, is I get to keep hunting. By Rick Bass. Illustrations by Stan Fellows

Buffalo Gal A heavy heart is lightened by gratitude during a once-in-a-lifetime hunt. By Ben Pierce

Monitoring Muleys How FWP figures out mule deer population trends and harvest recommendations, and why biologists say now is the time to issue more B licenses in southeastern Montana. By Tom Dickson

Coming Through Darkness Essay. By Gabriel Furshong

Q&A: Shoulder Season Basics What hunters and landowners need to know about FWP's unprecedented attempt to reduce extremely overabundant elk populations in 43 Montana hunting districts. By Montana Fish, Wildlife & Parks

"No, I'm Not Kidding!" When hunters get this phone call, it might be news they've been waiting for their entire lives. By Ron Aasheim

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How Low Can They Go? A team of cavers descends into the nation's deepest limestone cave, in Montana's Bob Marshall Wilderness, farther down than anyone has ever been. Story and photos by Braden Gunem

Overdue State and federal agencies say it's time to take Yellowstone region grizzly bears off the threatened species list. By Tom Dickson

Macro vs. Micro FWP sees populations. The public sees individual animals. Can the difference be resolved? By Tom Dickson

Saving the Best Forever FWP conservation easements protect critical wildlife habitat and secure hunting access while sustaining family ranches. Will new landowners support those goals? By Brett French. Photos by John Warner

The Mountain Men of Montana Even with the constant danger, physical hardship, and endless isolation, they lived what seemed to be free, independent lives that many of us dream of having. By PJ DelHomme

BACK ISSUES

ONLINE: All stories from 2002–2016 issues are available online at **fwp.mt.gov/mtoutdoors**. Most back issues of *Montana Outdoors* before 2002, along with most predecessor publications (*Montana Wild Life*, *Sporting Montana*, and *Montana Wildlife*) dating to 1928, are available online at https://archive.org.

PAST MAGAZINES are $4.50 each, which includes shipping. Send your request along with payment to: *Montana Outdoors*, P. O. Box 200701, Helena, MT 59620-0701.

Fisher

Pekania pennanti

By Tom Dickson

Before we die, the animal that many of my friends and I hope to see is the wolverine—that fierce, indomitable symbol of the wildest of wild places. For me, a close second is its cousin, the fisher.

I've been fascinated by fishers since I was a kid. I remember feeling the fur of a "Russian sable" coat in a fancy department store. I later learned that sables are a northern Eurasian furbearer closely related to the American marten and fisher. As a boy I also heard a recording of a fisher howling in northern Minnesota. It sounded like a person being murdered. To me, fishers embody both my lifelong fascination with luxury and fear of the dark, deep forest.

Identification

Fishers are mid-sized members of the weasel, or mustelid, family. Weighing from 5 to 10 pounds, they are about four times heavier than martens but markedly smaller than wolverines (17 to 27 pounds), the largest mustelid.

Fishers have dark eyes, rounded ears, and a pronounced muzzle. The fisher is stockier than the marten but has a similarly long body, short legs, and long (though thicker) tail. The coat is blackish brown to black, compared to the marten's usual golden-brown coat.

Common name

Fishers do not eat fish. The name comes from the Old Dutch *fisse* or French *fichet*, names for the European polecat, a similar-looking mustelid. For years, fishers were commonly called "fisher cats," likely because of their cat-like scream, partially retractable claws, and ability to climb trees. But fishers are not related to the felids.

Distribution

Before European settlement, fishers ranged across the Canadian provinces and down into the United States along the West Coast, through the intermountain Northern Rockies, and from northern Minnesota east and south through Appalachia. Unregulated trapping and forest clear-cutting vastly reduced numbers in the United States. Montana translocated fishers to the state's western mountains several times in the latter half of the 20th century. Today the species is found in Montana forests west of the Continental Divide, especially in the Cabinet Mountains, where the largest numbers were reintroduced.

Scientific name

Pekania is derived from the Canadian French *pékan*, a word of Algonquian origin for the fisher. ***Pennanti*** is named for the British naturalist Thomas Pennant, author of the first zoological text that described North American animals.

Reproduction

Fishers mate in late March to early April, but the young aren't born until almost a year later. As is the case with most mustelids, implantation of the fertilized eggs in the uterus is delayed. In the female fisher, the embryos remain dormant for more than nine months before implanting in the uterus to complete development. In March, the female gives birth to a litter of two to three kits in the cavity of a large tree or log, where she rears them for seven to eight weeks.

Food

Fishers feed with little discrimination. They eat small mammals—from deer mice to snowshoe hares—birds, deer carrion, and berries. According to Kerry Foresman, author of *Mammals of Montana*, they are the only predator other than the mountain lion that regularly kills porcupines. A fisher dances circles around its prickly prey and then attacks from the front, striking repeatedly at the porcupine's quill-less head until it dies or can be flipped onto its back, exposing the vulnerable neck and belly.

Management and status

FWP is trying to determine which areas of Montana can and cannot support fishers over the long term. Fishers are creatures of dense northern conifer forests with enough precipitation and the right soil conditions to grow large-diameter trees such as western red cedar that often hollow out. Fishers also do better in areas with moist, crusted snow systems than places with deep, dry powder.

Fisher harvest is strictly managed. In Montana, trapping is allowed only in prescribed areas for a few months in winter, with a total statewide sustainable harvest quota of just six fishers. After the quota is reached, or when a single female is trapped, FWP closes the entire season. In 2011, the U.S. Fish & Wildlife Service determined that the fisher in the Northern Rockies did not warrant listing under the Endangered Species Act.

Tom Dickson is editor of Montana Outdoors.

JUDY WANTULOK

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PARTING SHOT

NICE PLACE TO BUILD A HOUSE Fortunately, that won't happen at the Bird Creek Ranch along the Missouri River just downstream from Cascade. Landowners Cindy and Jim Kittredge sold a conservation easement to FWP that will ensure the property forever remains a working ranch that is rich in wildlife and preserves untarnished views like this. Learn more about FWP conservation easements on page 28. Photo by John Warner.

Montana Fish, Wildlife & Parks

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